Dell™ OptiPlex™ E1 Managed PC Reference and Installation Guide

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Introduction: Dell™ OptiPlex™ E1 Managed PC

Overview

The Dell™ OptiPlex™ E1 Managed PC is a high-speed, expandable personal computer designed around the Intel® Celeron™ microprocessor. The computer system uses a high-performance Peripheral Component Interconnect (PCI) design that allows you to configure the computer system to your initial requirements and then add Dell-supported upgrades as necessary. These systems also support the Industry-Standard Architecture (ISA) bus for older expansion devices.

This chapter describes the major hardware and software features of your system, provides information about accessing the online documentation, and tells you where to find help if you need it.

System Features

Your system offers the following features:

- An Intel Celeron microprocessor that runs at an internal speed of 300 mega- hertz (MHz) and an external bus speed of 66 MHz.

  The Intel Celeron microprocessor includes MMX™ technology designed to handle complex multimedia and communications software. This microprocessor incorporates new instructions and data types as well as a technique called single instruction, multiple data (SIMD) that allows the microprocessor to process multiple data elements in parallel, thereby improving overall system performance.

  The Celeron microprocessor has a 16-kilobyte (KB) internal data cache and a 16-KB internal instruction cache, an internal math coprocessor, and other advanced internal logic.

- A keyboard command (<Ctrl><Alt><\>) that lets you switch between the microprocessor's rated speed and a slower compatibility speed.

  NOTE: *This keyboard command is not available under the Microsoft® Windows NT® and IBM® OS/2® operating systems.*

- System memory that can be increased up to 256 megabytes (MB) by installing 16-, 32-, 64-, or 128-MB nonparity synchronous dynamic random-access memory (SDRAM) dual in-line memory modules (DIMMs) in the two DIMM sockets on the system board. See "Adding Memory" for details.
- Self-Monitoring and Analysis Reporting Technology II (SMART II) support, which warns you at system start-up if your hard-disk drive has become unreliable. To take advantage of this technology, you must have a SMART II-compliant hard-disk drive in your computer. All hard-disk drives shipped with the OptiPlex E1 system are SMART II-compliant.
- A basic input/output system (BIOS), which resides in flash memory and can be upgraded by diskette, or remotely over a network, if required.
- Full compliance with PCI specification 2.1.
- Full Plug and Play version 1.0a capability, which greatly simplifies the installation of expansion cards. Plug and Play support included in the system BIOS allows you to install Plug and Play expansion cards without setting jumpers or switches or performing other configuration tasks. The ISA Configuration Utility (ICU) allows you to configure existing non-Plug and Play ISA expansion cards for conflict-free operation. Also, because the system BIOS is stored in flash memory, it can be updated to support future enhancements to the Plug and Play standard.
- Wakeup On LAN capability, which, when enabled in the System Setup program, allows the system to be powered up from a

server management console. Wakeup On LAN capability also allows remote computer setup, software downloading and installation, file updates, and asset tracking after hours and on weekends when network traffic is at a minimum. For more information, refer to "Using the System Setup Program."

- Universal Serial Bus (USB) capability, which can simplify connecting peripheral devices such as mice, printers, and computer speakers. The USB connectors on your computer's back panel, which are enabled by default, provide a single connection point for multiple USB-compliant devices. USB-compliant devices can also be connected and disconnected while the system is running.
- A modular computer chassis with a minimum number of screws for easy disassembly and improved serviceability.

Hardware Features

The system board includes the following built-in features:

- Three expansion slots on a riser board: one 32-bit PCI expansion slot, one shared PCI (32-bit)/ISA (16-bit) expansion slot, and one 16-bit ISA expansion slot.
- A 64-bit baseline accelerated graphics port (AGP) video subsystem, which includes the ATI Rage II C super video graphics array (SVGA) video controller. This video subsystem contains 2 MB (upgradable to 4 MB) of synchronous graphics random-access memory (SGRAM) video memory. Maximum resolutions are 1600 x 1200 with 256 colors noninterlaced and 1280 x 1024 with 65,536 colors noninterlaced. In 1024 x 768, 800 x 600, and 640 x 480 resolutions, 16. 7 million colors are available for true-color graphics using a 32-bits per pixel (bpp) format. True-color provides higher performance, but it uses more graphics memory. Table 1-1 displays the video memory requirements for the Microsoft Windows® 95 and Windows NT 4.0 operating systems.

NOTE: *These resolutions and refresh rates may not be available on all monitors.*

Table 1-1. Video Memory Requirements

Video Resolution	Maximum Color Depth	Maximum Refresh Rate	Minimum SGRAM Option Required
640 x 480	True-color (32 bpp)	85 Hz	2 MB
800 x 600	True-color (32 bpp)	85 Hz	2 MB
1024 x 768	65,536 (16 bpp)	85 Hz	2 MB
1280 x 1024	256 (8 bpp)	75 Hz	2 MB
1024 x 768	True-color (32 bpp)	85 Hz	4 MB
1280 x 1024	65,536 colors (16 bpp)	75 Hz	4 MB
1600 x 1200	256 colors (8 bpp)	75 Hz	4 MB
NOTE: *For the full name of an abbreviation or acronym used in this table, see the Glossary in your online* System User's Guide.			

AGP provides a dedicated bus from the video subsystem to the system chip set. AGP-based video subsystems have two

significant performance advantages over PCI-based video subsystems:

- The AGP bus reduces bandwidth requirements of the PCI bus, improving overall system performance.

- The AGP bus allows a video subsystem to execute directly from main memory.

- A diskette/tape drive interface, which supports a 3.5-inch diskette drive and, optionally, a second diskette drive or tape drive.
- Enhanced integrated drive electronics (EIDE) support. The primary and secondary interface are both located on the PCI bus to provide faster data throughput. Each interface supports high-capacity EIDE drives, as well as devices such as advanced technology attachment (ATA) 33 hard-disk drives, EIDE CD-ROM drives, and EIDE tape drives.
- Two high-performance serial ports and one bidirectional parallel port for connecting external devices. The parallel port is fully Enhanced Capabilities Port (ECP)-compliant.
- A Personal System/2 (PS/2)-style keyboard port and a PS/2-compatible mouse port.
- An integrated, 10/100-megabit per second (Mbps) 3Com® PCI 3C905b-TX Ethernet network interface controller (NIC). The NIC is configured using software described in "Using Integrated Devices."
- A optional 16-bit, integrated Plug and Play Crystal CS4236B audio controller that provides all the sound functions of the Sound Blaster Pro expansion card. For more information, see your online *System User's Guide*.

Software Features

The following software is included with your Dell computer system:

- Utilities that safeguard your system and enhance the operation of its hardware features, such as maximizing your monitor's resolution capabilities. For information on these utilities, see your online *System User's Guide*.
- Video drivers for displaying many popular applications in high-resolution modes. For more information on these utilities, see your online *System User's Guide*.
- Audio drivers for enabling the sound functions on the integrated audio controller. For more information on these utilities, see your online *System User's Guide*.
- Bus-mastering EIDE drivers to improve performance by off-loading certain functions from the microprocessor during multithreaded operation (when several applications are running simultaneously). For more information on these utilities, see your online *System User's Guide*.
- The System Setup program for quickly viewing and changing the system configuration information for your system. For more information on this program, see "Using the System Setup Program"
- An Auto Power On utility that enables your system to perform routine tasks automatically in your absence. For more information on this utility, see your online *System User's Guide*.
- Enhanced security features (a setup password, a system password, a system-password lock option, a write-protect option for diskette drives, and automatic display of the system's service tag number) available through the System Setup program. In addition, a customer-definable asset tag number can be assigned via a software support utility and viewed on the System Setup screens. For more information, see your online *System User's Guide* and "Using the System Setup Program" of this document.
- Advanced power management options that can reduce the energy consumption of your system. For more information, see "Using the System Setup Program."
- The ICU, which tells you how to configure ISA expansion cards manually. After resources have been assigned to these cards, the system BIOS can assign resources to PCI and Plug and Play expansion cards for a conflict-free configuration. For more information, see "Using the ISA Configuration Utility".
- Dell Diagnostics for evaluating the computer's components and devices. For information on using the diagnostics, see the chapter titled "Running the Dell Diagnostics" in the *Diagnostics and Troubleshooting Guide*.
- Network device drivers for several network operating systems. These drivers are described in "Using Integrated Devices."
- Desktop Management Interface (DMI) support, which enables the management of your computer system's software and hardware. DMI defines the software, interfaces, and data files that enable your system to determine and report information about system components.

  If your system has a Dell-installed Windows 95 operating system, DMI is already installed on your system's hard-disk drive. To learn more about DMI, double-click the DMI icon in the Windows Control Panel.

  If your system included Dell-installed software, Dell provides a menu that allows you to make program diskette sets of your Dell-installed software (programs, drivers, and utilities; a CD with your operating system accompanied your computer). A *program diskette set* is an uninstalled version of a software package that you can use to reinstall or reconfigure the software.

You can use this same menu to remove *diskette image files* (individual files that correspond to each diskette in a program diskette set) to reclaim space on the computer's hard-disk drive. For more information on making program diskette sets, see the online help provided in the Dell Program Diskette Maker, which is located in the Dell Accessories folder.

- The Dell OpenManage™ program, which is a DMI browser that allows you to view your computer's current hardware configuration and operating system version. The Dell OpenManage provides information you may need if you call Dell for technical assistance or if you install hardware or software in your system. The Dell OpenManage program is located in the Dell Accessories folder. For more information on the Dell OpenManage program, see the next subsection, "Manageability Features."

Manageability Features

Your Dell OptiPlex E1 Managed PC incorporates many hardware and software features to improve the manageability of the system. Installed features include:

- Dell OpenManage program
- PXE
- Wakeup On LAN
- Auto Power On
- Security Features

Dell OpenManage Program

The Dell OpenManage program is the Dell software-management application interface for DMI. It allows you to manage system-level information, such as system configuration information and management information format (MIF) database values (see Figure 1-1).

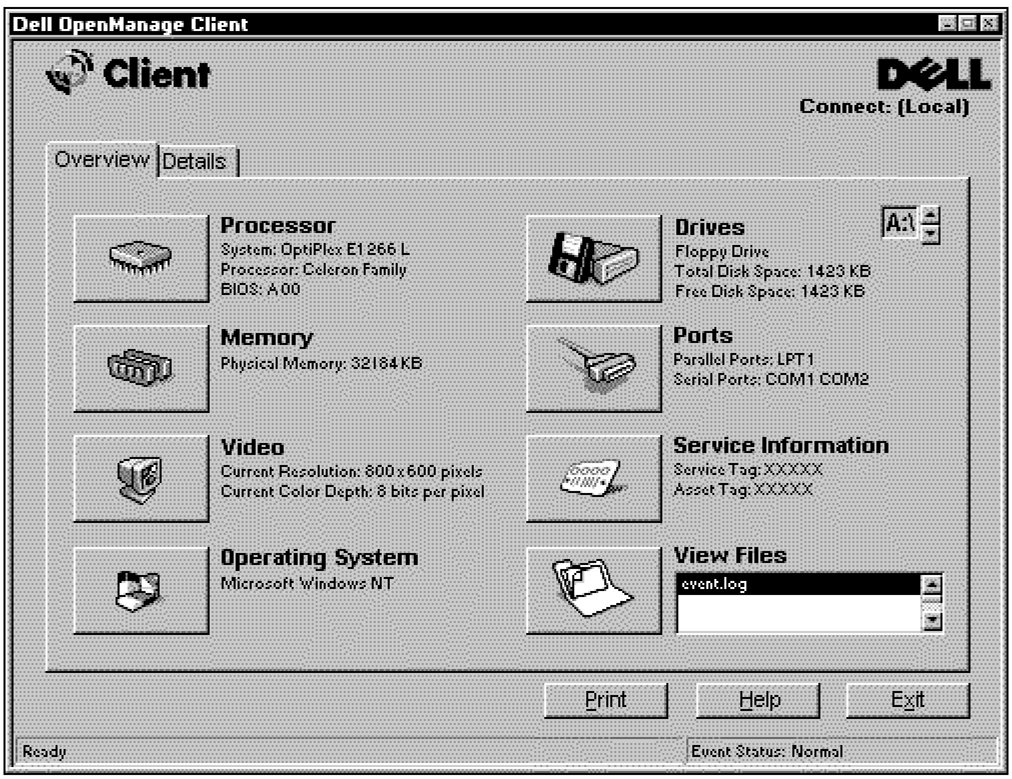


Figure 1-1. Dell OpenManage Program

On systems running WIndows 95 or Windows NT 4.0, the Dell OpenManage program is available in client and administrator versions. The Dell OpenManage administrator version enables system administrators to view, manage, and inventory remote systems in a Dell DMI client network and incorporates the following manageability features, which are based on the DMI 2.0 specification.

Fault Management

Fault Management features of Dell OpenManage include:

- Alerts to warn you about events generated by SMART drives on a local or remote system and about thermal errors
- An event log that stores events in a text file and reports information about the event under the following categories: System Name, Component Name, Date and Time, Event Type, Event Severity, Event Class, and Event System

Configuration Management

Configuration Management features of the Dell OpenManage include:

- Wakeup On LAN support, which allows network administrators to remotely turn on Managed PC systems with Wakeup On LAN capability in a Dell DMI network.
- A System Properties window that enables network administrators to view, set, or disable certain hardware configuration settings for the local and remote systems in a Dell DMI network.
- Support for the Microsoft System Management Server (SMS), which allows the exporting of one or more groups to an SMS directory that the SMS administrator can access.
- A Monitor component for systems running Windows 95 and having a display data channel (DDC)-compliant video subsystem and monitor.
- Automated inventory control of one or more groups for the remote systems in a Dell DMI network. Network administrators can automate inventory to occur every day, week, or month at a certain hour, on the hour; or you can enable inventory as needed. The Dell OpenManage creates a text file for the group(s) and saves it to a user-defined directory.
- Support for the application used to create user-definable attributes (UDAs).

Asset Management

Asset Management features of the Dell OpenManage include:

- Support that enables network administrators to remotely view, enter, and modify an asset tag number for a remote system in a Dell DMI network
- Automated and manual mapping of one or more groups to a user-defined directory

Security Management

Dell OpenManage includes password security that enables network administrators to maintain standard attribute values for the local and remote systems in a Dell DMI network.

For more information about Dell OpenManage, refer to the online Dell OpenManage Help that accompanied the software.

PXE

The preboot execution environment (PXE) allows a personal computer to be managed by one or more servers running the LANDesk® Configuration Manager (LCM) software, which provides management services for the many Managed PC systems on the network. The LCM allows network administrators to perform the following tasks:

- Provide preboot support for a new Managed PC that depends on the server for its initial operating system installation
- Service the network boot requests from the Managed PC systems
- Download diagnostics and BIOS update utilities
- Format the hard-disk drive, if required
- Download and install the operating system, based on previously established profiles
- Download and install applications
- Update the operating system and applications as required

For additional information about the Intel LCM, refer to the documentation that accompanied the software.

Wakeup On LAN

The Wakeup On LAN feature allows you to remotely turn on a Managed PC that is in a sleep state. The ability to turn on the Managed PC systems remotely allows you to perform remote computer setup, software downloading and installation, file updates,

and asset tracking after hours and on weekends when users are not using the systems and network traffic is at a minimum.

To use the Wakeup On LAN feature, each Managed PC must contain a NIC that supports Wakeup On LAN. You must also enable the Wakeup On LAN category in the System Setup program.

Auto Power On

Auto Power On enables you to turn on the computer system automatically on certain days of the week at a preset time. You can set Auto Power On to turn on the system either every day or every Monday through Friday.

NOTE: *This feature does not work if the system is shut off using a power strip or surge protector.*

Security Features

Your Dell OptiPlex E1 system has the following integrated security features.

Chassis Intrusion

A built-in chassis intrusion alarm displays the status of the system chassis intrusion monitor. If the chassis has been opened, the setting changes to Detected and the following message is displayed during the boot sequence at system start-up:

Alert! Cover was previously removed.

The field can be cleared using the System Setup program to enable future intrusions to be detected. For more information, see "Using the System Setup Program."

Security Cable Slot and Padlock Ring

On the back of the computer are a security cable slot and padlock ring (see Figure 1-2) for attaching commercially available antitheft devices. Security cables for personal computers usually include a segment of galvanized cable with an attached locking device and key. To prevent unauthorized removal of your computer, loop the cable around an immovable object, insert the locking device into the security cable slot on the back of your computer, and lock the device with the key provided. Complete instructions for installing this kind of antitheft device are usually included with the device.

NOTE: *Antitheft devices are of differing designs. Before purchasing such a device, make sure it will work with the cable slot on your computer.*

The padlock ring allows you to secure the computer cover to the chassis to prevent unauthorized access to the inside of the computer. To use the padlock ring, insert a commercially available padlock through the ring and then lock the padlock.

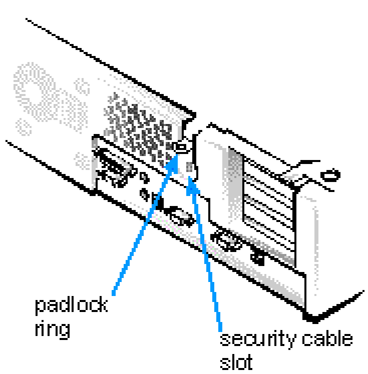


Figure 1-2. Security Cable Slot and Padlock Ring

Passwords

The password feature enables you to set a user-defined password to restrict access to the system. Additional protection is available through the System Setup program. When the Setup Password category is set to Enabled, Password Status allows you to prevent the system password from being changed or disabled at boot time. For more information, see "Using the System Setup Program".

Using the Power Switch

If the system does not turn off when the power switch is pressed, the system may be hung. Press and hold the power switch until the system turns off completely (this process may take several seconds). Alternatively, press the reset button to reset the system and reboot. If the system is hung and both buttons fail to function properly, unplug the AC power cable from the computer, wait for it to completely stop running, plug in the AC power cable, and if it the system does not restart, press the power switch to restart the system.

Using the Optional Stand for Vertical Orientation

Dell offers an optional stand that you can attach to the computer for a mini tower (vertical) orientation. Although you can attach (and remove) the stand at any time with a minimum of system disruption, it is easiest to attach before you set up your computer and connect the back-panel cables.

Attach the stand as follows:

1. **Turn the computer onto its right side, so that the drive bays are at the bottom.**
2. **Fit the stand onto what was the left side of the computer.**

   Position the stand as shown in Figure 1-3. Align the large round hole in the stand with the securing button on the side of the cover, and align the captive thumbscrew in the stand with the screw hole in the cover.

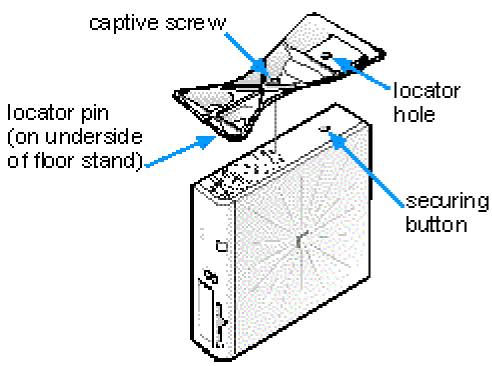
   

   Figure 1-3. Attaching the Optional Stand for Vertical Orientation

   As you lower the stand into place, make sure that the locator pin (see Figure 1-3) fits into the corner hole of the hole pattern as shown. When the stand is in place, tighten the thumbscrew.

3. **Rotate the computer so that the stand is at the bottom and the drives are at the top.**

To remove the stand, turn the computer over so the stand is at the top, loosen the screw and lift the stand away, and place the computer in a horizontal position.

Energy Star Compliance

Certain configurations of Dell computer systems comply with the requirements set forth by the Environmental Protection Agency (EPA) for energy-efficient computers. If the front panel of your computer bears the Energy Star Emblem (see Figure 1-4), your original configuration complied with these requirements and all Energy Star power management features of the computer are enabled. To disable or change the operation of these features, you must change the setting for the Power Management category in the System Setup program. For instructions, see "Using the System Setup Program."

NOTES: *As an Energy Star Partner, Dell Computer Corporation has determined that this product meets the Energy Star guidelines for energy efficiency.*

Any Dell computer bearing the Energy Star Emblem is certified to comply with EPA Energy Star requirements ***as configured when shipped by Dell****. Any changes you make to this configuration (such as installing additional expansion cards or drives) may increase the system's power consumption beyond the limits set by the EPA's Energy Star Computers program.*

Figure 1-4. Energy Star Emblem

The EPA's Energy Star Computers program is a joint effort between the EPA and computer manufacturers to reduce air pollution by promoting energy-efficient computer products. The EPA estimates that use of Energy Star computer products can save computer users up to two billion dollars annually in electricity costs. In turn, this reduction in electricity usage can reduce emissions of carbon dioxide, the gas primarily responsible for the greenhouse effect, and sulfur dioxide and nitrogen oxides, which are the two primary causes of acid rain.

Computer users can also help to reduce electricity usage and its side effects by turning off their computer systems when they are not in use for extended periods of time—particularly at night and on weekends.

Important Note for Windows 95 Users

Your system was configured by Dell to optimize the features of the Windows 95 operating system. To ensure that all of these features are maintained on your system, you must use the version of Windows 95 that Dell installed on your hard-disk drive.

Should you need to reinstall Windows 95 on an OptiPlex E1 system for any reason, you must be sure to reinstall the correct version. Dell recommends performing a periodic tape backup of the system's entire hard-disk drive so that, if necessary, the operating system, drivers, and other software can be reinstalled as originally configured with a minimum of downtime.

If you are unable to reinstall your software from a tape backup of the hard-disk drive, you can reinstall Windows 95 from the system's Windows 95 CD that you received from Dell. *However, if you reinstall Windows 95 in this manner, the bus-mastering functionality of the Windows 95 EIDE driver, which was operative in your original configuration, will be disabled*. (Your system will operate without the bus-mastering functionality with only a small degradation in performance. For information on the advantages of using bus-mastering drivers, see "Bus-Mastering EIDE Drivers" in the "Using Drivers and Utilities" section of your online System User's Guide.) You may also need to reinstall your system's video and NIC drivers from the diskettes created from the Dell-installed software on your system.

NOTE: *If you are a system administrator of corporate networks and you must download Windows 95 from a server to client systems, make sure that you have the Windows 95 backup media for the OptiPlex E1 system on your server before downloading.*

Intel PIIX4e INF Update Installer for Windows 95

NOTE: *The following procedure applies only to versions of Windows 95 installed by Dell.*

If you must reinstall Windows 95 on your computer system, you also need to run the Intel PIIX4e INF Update Installer for Windows 95 immediately after installing the operating system. Doing so enables Windows 95 to detect and configure PCI devices controlled by the integrated 82371EB component.

Before you can perform the update, you must make a diskette copy of the update software from the disk image on the hard-disk drive. To make the diskette copy, use the Program Diskette Maker, which is located in the Dell Accessories folder. Refer to the online *System User's Guide* for information about using the Program Diskette Maker.

The following procedure describes how to install the update:

1. **Insert the *Windows 95 Intel Support Driver Ver. A00* diskette into drive A.**
2. **Click the Start button and click Run.**
3. **Type** a:\setup.exe **and press OK.**
4. **Click Next on the Welcome Screen.**

   The license agreement opens in the Notepad application.

5. **View the text file and close the Notepad application when you are ready to proceed.**
6. **Click Yes to continue.**

   The next dialog box lists the information (**.inf**) files on your system that will be revised by the update software.

7. **Click Next to continue.**
8. **When the update is complete, remove the diskette from the diskette drive and click OK to restart your system.**

   During system start-up, the operating system detects new hardware and the Update Device Driver Wizard screen appears.

9. **Click Next to continue.**

   The system finds the hardware device driver on the hard-disk drive and installs it.

10. **Click Finish to continue.**

    The system continues its start-up routine. When Windows 95 finishes loading, a dialog box appears and informs you that the system configuration settings have changed and asks if you want to restart your system.

11. **Click OK to restart the system.**

Accessing Online Documentation

The online *System User's Guide* installed on your hard-disk drive contains information on the following topics:

- Using the online *System User's Guide*
- System features
- Using drivers and utilities
- Using the audio controller
- Using the System Setup program
- Configuring expansion cards
- Securing your computer
- Connecting external devices
- Maintaining the system
- Contacting Dell
- Using the online Adobe™ Acrobat PDF documents

The guide also contains a glossary of commonly used terms and abbreviations.

The online *System User's Guide* is located in the Dell Accessories folder.

To print any of the topics from this guide, display the topic you want on your screen and select Print Topic from the File menu.

Getting Help

Dell provides a number of tools to help you if you don't understand a procedure described in this guide or if your system does not perform as expected. For information on these help tools, see the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide* or the "Contacting Dell" section in the online *System User's Guide*.

Using the System Setup Program: Dell™ OptiPlex™ E1 Managed PC

Overview

Each time you turn on your computer system or press the reset button, the system compares the hardware installed in the system to the hardware listed in the system configuration information stored in nonvolatile random-access memory (NVRAM) on the system board. If the system detects a discrepancy, it generates error messages that identify the incorrect configuration settings. The system then prompts you to enter the System Setup program to correct the setting.

You can use the System Setup program as follows:

- To change the system configuration information after you add, change, or remove any hardware in your system
- To set or change user-selectable options—for example, the time or date on your system

You can *view* the current settings at any time. When you *change* a setting, in many cases you must reboot the system before the change takes effect.

After you set up your system, run the System Setup program to familiarize yourself with your system configuration information and optional settings. Dell recommends that you print the System Setup screen (by pressing the <Print Screen> key) or write down the information for future reference.

Before you use the System Setup program, you need to know the kind of diskette drive(s) and hard-disk drive(s) installed in your computer. If you are unsure of any of this information, see the Manufacturing Test Report that was shipped with your system and is located in the Dell Accessories folder.

Entering the System Setup Program

Enter the System Setup program as follows:

1. **Turn on your system.**

   If your system is already on, shut it down and then turn it on again.

2. **When the Press <F2> to Enter Setup window appears in the upper-right corner of the screen, press <F2>.**

If you wait too long and your operating system begins to load into memory, let the system complete the load operation; then shut down the system and try again.

NOTE: *To ensure an orderly system shutdown, consult the documentation that accompanied your operating system.*

You can also enter the System Setup program by responding to certain error messages. See "Responding to Error Messages" at

the end of this chapter.

System Setup Screen

The System Setup screen displays the current setup and configuration information and optional settings for your system. (Typical examples are illustrated in Figure 2-1.) Information on the System Setup screen is organized in four areas:

- Title box

  The box at the top of the screen lists the system name.

- System data

  The two boxes below the title box display information about your system, such as the basic input/output system (BIOS) revision number.

- Configuration options

  The box under the system data boxes lists categories that define the installed hardware in your computer.

  Fields beside the categories contain options or values; you can change those that appear in white on the screen. You cannot change options or values that appear in a color highlight because they are determined by the system.

  Some categories have multiple fields, which may show options or values as bright or less bright depending upon what options or values you entered in other fields.

- Key functions

  The line of boxes across the bottom of the screen lists keys and their functions within the System Setup program.

Using the System Setup Program

Table 2-1 lists the keys you use to view or change information on the System Setup screen and to exit the program.

Table 2-1. System-Setup Navigation Keys

Keys	Action
Tab or ↓	Moves to the next field.
Shift Tab or ↑	Moves to the previous field.
← or →	Cycles through the settings in a field. In many fields, you can also type the appropriate value.
Enter	Enters the selected field's pop-up settings menu.
+ or –	Cycles through the settings in the selected field's pop-up settings menu.
Esc	Saves the selected settings in a field's pop-up settings menu and returns to the main System Setup screen.

	For a few options (as noted in the help area) the changes take effect immediately. Exits the System Setup program at the System Setup screen if no settings in any option were changed. Provides exit menu options if changes were made. Highlight a menu option to select it and press <Enter> to activate it. • Save Changes and Exit option exits the System Setup program and reboots the system, implementing any changes you have made. • Discard Changes and Exit option exits the System Setup program without rebooting the system and returns the system to its previous state - the boot routine. • Return to Setup option returns to the System Setup screen.
Alt D	Resets the selected options to their default settings.
F1	Displays help information for the selected option.

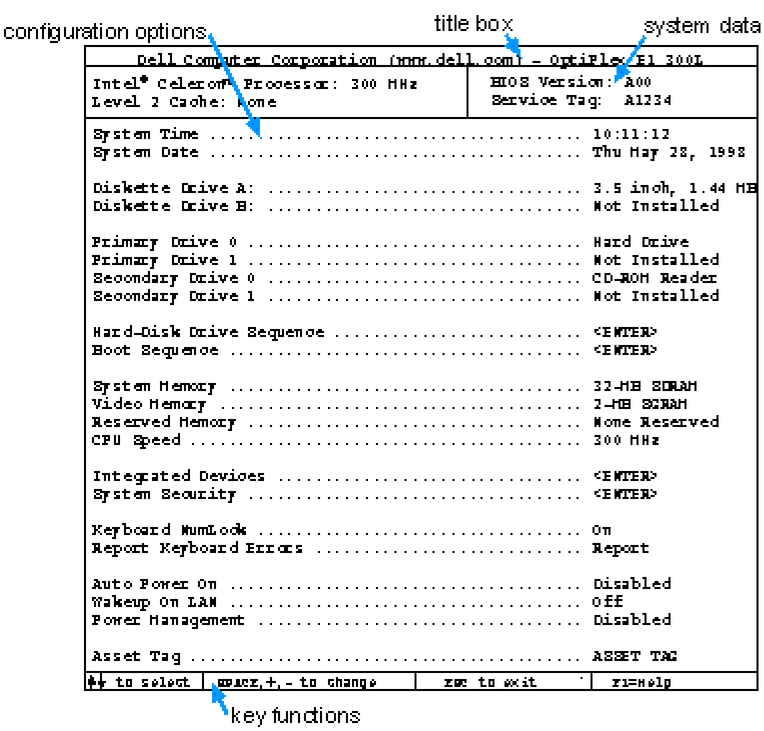


Figure 2-1. System-Setup Screen

System Setup Categories

The following subsections explain in detail each of the categories on the System Setup screen.

System Time

System Time resets the time on the computer's internal clock.

Time is kept in a 24-hour format (*hours*:*minutes*:*seconds*). To change the time, press the left- or right-arrow keys to select a field, and then press <+> or <-> to increase or decrease the number. If you prefer, you can type numbers in each of the fields.

System Date

System Date resets the date on the computer's internal calendar.

Your system automatically displays the day of the week corresponding to the settings in the *month*, *day-of-month*, and *year* fields.

To change the date, press the left- or right-arrow keys to select a field, and then press <+> or <-> to increase or decrease the number. If you prefer, you can type numbers in the *day-of-month* and *year* fields.

Diskette Drive A and Diskette Drive B

Diskette Drive A and Diskette Drive B identify the type of diskette drives installed in your computer. With the standard cabling configuration, Diskette Drive A (the boot diskette drive) is the 3.5-inch diskette drive installed in the top externally accessible drive bay; Diskette Drive B is any drive installed in the bottom externally accessible drive bay that is connected to the system's diskette/tape drive interface.

The category options always match the physical locations of the drives in your computer—the first drive listed is the top drive in your computer.

The Diskette Drive A and Diskette Drive B categories have the following options:

- 5.25 Inch, 360 KB
- 5.25 Inch, 1.2 MB
- 3.5 Inch, 720 KB
- 3.5 Inch, 1.44 MB
- Not Installed

NOTE: *Tape drives are not reflected in the Diskette Drive A and Diskette Drive B categories. For example, if you have a single diskette drive and a tape drive attached to the diskette/tape drive interface cable, set Diskette Drive A to match the characteristics of the diskette drive and set Diskette Drive B to Not Installed.*

Primary Drive n and Secondary Drive n

Primary Drive *n* identifies drives attached to the primary enhanced integrated drive electronics (EIDE) interface connector (labeled "IDE1") on the system board; Secondary Drive *n* identifies drives connected to the secondary EIDE interface connector (labeled "IDE2"). It is recommended that you use the secondary EIDE interface connector for EIDE CD-ROM and EIDE tape drives.

NOTES: *For all devices obtained from Dell that use the built-in EIDE controller, set the appropriate Drive category to Auto.*

You must have an EIDE device connected to the primary EIDE interface if you have an EIDE device connected to the secondary EIDE interface.

These four categories identify the type of EIDE devices installed in the computer. For each drive, five parameters can be chosen as a group by drive-type number, entered individually from the keyboard, or set automatically. A *drive-type number* specifies the

parameters of a hard-disk drive, based on a table recorded in the system's BIOS.

To choose a setting for each category, press <Enter> to access the field's pop-up options menu. Then type characters from the keyboard or use the left- or right-arrow key to cycle through the following options:

- Auto (use this setting for all EIDE devices from Dell)
- Off
- User 1 or User 2
- A specific drive-type number

NOTE: *Operating systems that bypass the system BIOS may not obtain optimum hard-disk drive performance.*

EIDE Devices

For EIDE hard-disk drives, the system provides an automatic drive-type detect feature. To use this feature for Primary Drive 0, highlight the Primary Drive 0 category and type a (for *automatic*); to use it for Primary Drive 1, highlight the Primary Drive 1 category and type a. In each case, the category setting changes to Auto. After the system reboots, the System Setup program automatically sets the correct drive-type number and parameters for each drive.

Before installing a new EIDE hard-disk drive, also check the documentation that came with the drive to verify that all jumper settings on the drive are appropriate for your configuration.

If You Have a Problem

If the system generates a drive error message the first time you boot your system after installing an EIDE drive, it may mean that your particular drive does not work with the automatic drive-type detect feature. If you suspect that your problem is related to drive type, try entering your drive-type information in one of the following ways.

If You Know the Drive-Type Number

Use the drive-type number you found in the documentation that came with the drive, or if the drive was installed by Dell when you purchased your system, access the Manufacturing Test Report from the Dell Accessories folder.

To set the drive-type number in the System Setup program, highlight the appropriate drive category (Primary Drive 0 or Primary Drive 1) and type the correct drive-type number. If you prefer, you can press the right- or left-arrow key to increase or decrease, respectively, the drive-type number until the correct one is displayed.

If You Do Not Know the Drive-Type Number

The Drive 0 and Drive 1 categories display the following five parameters for each drive:

- Drive Type is the drive-type number for the selected hard-disk drive.
- Capacity (automatically calculated by the system) indicates the number of millions of bytes of storage provided by the drive.
- Cylinders is the number of logical cylinders.
- Heads indicates the number of logical heads in the drive.
- Sectors is the number of logical sectors per track.

If none of the supported drive types match the parameters of your new drive, you can enter your own parameters. To do so, highlight the Drive 0 category and type u to display User 1. You can then use the right- or left-arrow key to switch between the User 1 and User 2 settings (only two user-defined drive types are allowed). Then press the <Tab> key to highlight each of the parameter fields in succession, and enter the appropriate number for each field.

NOTE: *The User 1 and User 2 drive types can be used for both the Primary and Secondary Drive 0 and Drive 1 categories. However, if you select the User 1 or User 2 drive type, you may not obtain optimum hard-disk drive performance. Also, the User 1 and User 2 drive types cannot be used for hard-disk drives greater than 528 megabytes (MB) in capacity.*

Hard-Disk Drive Sequence

The Hard-disk Drive Sequence lists installed adapter cards and devices in the order they will be initialized. The first hard-disk drive in the list becomes the bootable drive C.

Boot Sequence

Boot Sequence enables you to set the order of the devices from which the system attempts to boot.

The term *boot* refers to the system's start-up procedure. When turned on, the system "bootstraps" itself into an operational state by loading into memory a small program, which in turn loads the necessary operating system. Boot Sequence tells the system where to look for the files that it needs to load.

To set the boot device order, press <Enter> to access the field's pop-up options menu. Use the up- and down-arrow keys to move through the list of devices. Press <Enter> to enable or disable a device (enabled devices appear with a check mark). Press <+> or <-> to move a selected device up and down the list. The following sections detail typical devices.

Diskette Drive A:

Selecting Diskette Drive A: as the first device causes the system to try booting from drive A first. If the system finds a diskette that is not bootable in the drive or finds a problem with the drive itself, it displays an error message. If it does not find a diskette in the drive, the system tries to boot from the next device in the boot sequence list.

Hard-Disk Drive

Selecting Hard Disk Drive causes the system to attempt to boot first from the hard-disk drive and then from the next device in the boot sequence list.

IDE CD-ROM Reader

Selecting IDE CD-ROM Reader causes the system to try booting from the CD-ROM drive first. If the system finds a CD that is not bootable in the drive or finds a problem with the drive itself, it displays an error message. If it does not find a CD in the drive, the system tries to boot from the next device in the boot sequence list.

Onboard NIC

Selecting Onboard NIC causes the system to try booting from the integrated network interface controller (NIC) first.

PXE

Selecting PXE (Preboot eXecution Environment) causes the system to boot from the integrated network interface controller (NIC) first. If a boot routine is not available from the network server, the system tries to boot from the next device in the boot sequence list.

System Memory

System Memory indicates the entire amount of installed memory detected in your system, except for memory on Expanded Memory Specification (EMS) expansion cards. After adding memory, check this category to confirm that the new memory is installed correctly and is recognized by the system.

Video Memory

Video Memory displays the amount of video memory detected in your system.

Reserved Memory

Reserved Memory allows you to designate a region of system board memory that can be supplied by an expansion card. You should not enable the reserved memory feature unless you are using an expansion card that requires special addressing.

For example, you may have a memory expansion card that needs to be addressed starting at 15 MB. Selecting the 15M - 16M option in the Reserved Memory category specifies that the base memory from 15 to 16 MB come from the memory expansion card (the base memory below the 15-MB address comes from the dual in-line memory modules [DIMMs] on the system board).

The Reserved Memory category has the following options:

- None Reserved (the default option)
- 512KB - 640KB
- 15MB - 16MB

CPU Speed

CPU Speed indicates the processor speed at which your system boots.

Press the left- or right-arrow key to toggle the CPU Speed category between the resident microprocessor's rated speed (the default setting) and a lower compatibility speed, which lets you accommodate speed-sensitive applications. A change to this category takes effect immediately (rebooting the system is not required).

To toggle between the rated processor speed and the compatibility speed while the system is running in real mode, press <Ctrl><Alt><\>. (For keyboards that do not use American English, press <Ctrl><Alt><#>.)

Integrated Devices

Integrated Devices configures the devices integrated into the system board. Press <Enter> to configure these options.

Sound

Sound determines whether the integrated audio controller is On or Off.

Network Interface Controller

Network Interface Controller determines whether the integrated NIC is On, Off, or On with PXE. The default is On with PXE, which means that the NIC is enabled but not set to boot the system remotely from a network server.

Mouse Port

Mouse Port enables or disables the system's built-in Personal System/2 (PS/2) -compatible mouse port. Disabling the mouse allows an expansion card to use interrupt request (IRQ) 12.

For more information about built-in ports, port designations, IRQs, and the remapping of ports, see "Connecting External Devices" in your *online System User's Guide*.

Serial Port 1 and Serial Port 2

Serial Port 1 and Serial Port 2 configure the system's built-in serial ports. These categories can be set to Auto (the default option) to automatically configure a port, to a particular designation (COM1 or COM3 for Serial Port 1; COM2 or COM4 for Serial Port 2), or to Off to disable the port.

If you set a serial port to Auto and add an expansion card containing a port configured to the same designation, the system automatically remaps the built-in port to the next available port designation that shares the same IRQ setting as follows:

- COM1 (input/output [I/O] address 3F8h), which shares IRQ4 with COM3, is remapped to COM3 (I/O address 3E8h).
- Likewise, COM2 (I/O address 2F8h), which shares IRQ3 with COM4, is remapped to COM4 (I/O address 2E8h).

NOTES: *When two COM ports share an IRQ setting, you can use either port as necessary, but* ***you may not be able to use them both at the same time****. If the second port (COM3 or COM4) is also in use, the built-in port is turned off.*

If you are using the Microsoft Windows 95 or IBM OS/2 operating system, you cannot use both serial ports at the same time.

For more information about built-in ports, port designations, IRQs, and the remapping of ports, see "Connecting External Devices" in your online *System User's Guide*.

Parallel Port

Parallel Port configures the system's built-in parallel port. This category can be set to 378h (the default setting), to alternate addresses 278h or 3BCh, or to Off to disable the port.

NOTE: *Do not set Parallel Port to 278h if you have an Enhanced Capabilities Port (ECP) device connected to the port.*

Parallel Port Mode

Parallel Port Mode controls whether the system's built-in parallel port acts as an AT-compatible (unidirectional) or PS/2-compatible (bidirectional) port.

Your system also supports ECP mode, which can be used by Windows 95. Windows 95 uses ECP protocol automatically if it detects an ECP-capable device, eliminating the need for an ECP option in this category.

Set this category according to the type of peripheral device connected to the parallel port. To determine the correct mode to use, see the documentation that came with the device.

IDE Drive Interface

IDE Drive Interface enables or disables the system's built-in EIDE hard-disk drive interface.

With Auto (the default option) selected, the system turns off the built-in EIDE interface when necessary to accommodate a controller card installed in an expansion slot.

As part of the boot routine, the system first checks for a primary hard-disk drive controller card installed in an expansion slot. If no card is found, the system enables the built-in EIDE interface to use IRQ14 and IRQ15.

If a primary controller is detected on the expansion bus, the built-in EIDE interface is disabled.

Selecting Off disables the built-in EIDE interface.

Diskette Interface

Diskette Interface controls the operation of the system's built-in diskette drive controller.

With Auto (the default option) selected, the system turns off the built-in diskette drive controller when necessary to accommodate a controller card installed in an expansion slot.

With Write Protect selected, nothing can be written to diskette drives and tape drives using the system's built-in diskette drive controller. (The system can still read from the drives.) When this option is selected, the Auto option (whereby the system turns off the built-in diskette drive controller as necessary) is also in effect.

Selecting Off turns off the built-in diskette/tape drive controller; this option is used primarily for troubleshooting purposes.

PC Speaker

PC Speaker determines whether the on-board speaker is On (the default) or Off. A change to this category takes effect immediately (rebooting the system is not required).

Video DAC Snoop

Video DAC Snoop lets you correct video problems that may occur when certain video expansion cards are used. The default is Off. If you are using a video card and problems such as incorrect colors or blank windows occur, set Video DAC Snoop to On.

System Security

System Security configures the password and chassis intrusion options. Press <Enter> to configure these options.

System Password

System Password displays the current status of your system's password security feature and allows you to assign and verify a new password. No one can assign a new password unless the current status is Not Enabled, which is displayed in bright characters.

The System Password category has the following options:

- Not Enabled (the default option)
- Enabled
- Disabled by Jumper

NOTE: *Read "Using the System Password Feature" found later in this chapter for instructions on assigning a system password and using or changing an existing system password. See "Disabling a Forgotten Password" found later in this chapter for instructions on disabling a forgotten setup password.*

Password Status

When Setup Password is set to Enabled, Password Status allows you to prevent the system password from being changed or disabled at system start-up.

To lock the system password, you must first assign a setup password in the Setup Password category and then change the Password Status category to Locked. When Setup Password has a password assigned and Password Status is Locked, the system password cannot be changed through the System Password category and cannot be disabled at system start-up by pressing <Ctrl><Enter>.

To unlock the system password, you must enter the setup password in the Setup Password category and then change the Password Status category to Unlocked. In this state, the system password can be disabled at system start-up by pressing <Ctrl><Enter> and then changed through the System Password category.

Setup Password

Setup Password lets you restrict access to your computer's System Setup program in the same way that you restrict access to your system with the system password feature. The options are:

- Not Enabled (the default option)
- Enabled
- Disabled by Jumper

NOTE: *Read "Using the Setup Password Feature" found later in this chapter for instructions on assigning a setup password and using or changing an existing setup password. See "Disabling a Forgotten Password" found later in this chapter for instructions on disabling a forgotten setup password.*

Chassis Intrusion

Chassis Intrusion displays the status of the system chassis intrusion monitor. The default setting is Not Detected.

If the computer cover is removed, the setting changes from Not Detected to Detected and the following message is displayed during the boot sequence at system start-up:

Alert! Cover was previously removed.

To clear this field and allow future intrusions to be detected, enter the System Setup program, as described in "Entering the System Setup Program" found earlier this chapter. At the Chassis Intrusion category, use the left- or right-arrow key to choose Reset. Then press <Alt><B> to save the change and reboot the system.

NOTE: *When enabled, the setup password is required in order to reset the Chassis Intrusion category from Detected to Not Detected. You cannot reset the Chassis Intrusion category without a password.*

Keyboard NumLock

Keyboard NumLock determines whether your system boots with the Num Lock mode activated on 101- or 102-key keyboards (it does not apply to 84-key keyboards).

When Num Lock mode is activated, the rightmost bank of keys on your keyboard provides the mathematical and numeric functions shown at the tops of the keys. When Num Lock mode is turned off, these keys provide cursor-control functions according to the label on the bottom of each key.

Report Keyboard Errors

Report Keyboard Errors enables or disables reporting of keyboard errors during the POST, which is a series of tests that the system performs on the hardware each time you turn on the system or press the reset button.

This category is useful when applied to self-starting servers or host systems that have no permanently attached keyboard. In these situations, selecting Do Not Report suppresses all error messages relating to the keyboard or to the keyboard controller during POST. This option does not affect the operation of the keyboard itself if a keyboard is attached to the computer.

Auto Power On

Auto Power On allows you to set the time and days of the week to turn on the computer system automatically. You can set Auto Power On to turn on the system either every day or every Monday through Friday.

NOTE: *This feature does not work if you turn off your system using a power strip or surge protector.*

Time is kept in a 24-hour format (hours:minutes). To change the start-up time, press the right-arrow key to increase the number in the highlighted field or press the left-arrow key to decrease the number. If you prefer, you can type numbers in both fields.

The default for Auto Power On is Disabled.

Wakeup On LAN

Wakeup On LAN determines whether the Wakeup On LAN feature is set to On or Off. You must reboot your system before a change takes effect.

Power Management

For certain types of monitors and most EIDE hard-disk drives, you can reduce system power consumption by enabling the power management feature. With Power Management enabled, these monitors and drives automatically switch into low-power mode during periods of system inactivity.

Power Management can be implemented at three levels - Maximum, Regular, and Minimum. (The different levels apply to the monitor only; hard-disk drive operation is the same for all three.) The default setting for this category is Disabled.

Saving Monitor Power

If you have a Video Electronics Standards Association (VESA ®) Display Power Management Signaling (DPMS)-compliant monitor, enabling the Power Management category reduces monitor power consumption during periods of keyboard and mouse inactivity.

CAUTION: Check your monitor documentation to make sure you have a DPMS-compliant monitor before you enable this feature. Otherwise, you risk damaging the monitor.

NOTE: *The power management feature monitors activity of a mouse connected to the PS/2-compatible mouse port.*

By setting Power Management to Maximum, Regular, or Minimum, you can set predefined time-out periods (see Table 2-2) for the two successive monitor shutdown stages, *standby* and *off*.

NOTE: *Each monitor manufacturer defines the details of the shutdown stages for its own monitors. But in all cases, power consumption decreases with each stage from "on" (full power) to "standby" (reduced power; the display image usually disappears) to "off" (where power consumption is minimal). To define these stages for your monitor, see documentation that came with the monitor.*

From either shutdown stage, you can return full power to the monitor in one of the following ways:

- For most DPMS-compliant monitors, any subsequent activity—including moving the mouse—should return full power to the monitor.
- A few DPMS-compliant monitors require that you turn monitor power off and then on again to return to full power.

Check your monitor documentation for information on how your monitor is designed to operate.

Saving EIDE Hard-Disk Drive Power

For most systems, enabling Power Management at any level causes EIDE hard-disk drives to switch to low-power mode after about 20 minutes of system inactivity (see Table 2-2).

NOTES: *All EIDE drives shipped with your system support this feature. (For more information, see "Energy Star Compliance")*

However, not all EIDE hard-disk drives support this feature. Enabling this feature for drives that do not support it may cause the EIDE drive to become inoperable until the computer is restarted and the Power Management category is disabled.

In low-power mode, the disks inside the drive stop spinning. They remain idle until the next drive access, which causes them to start spinning again. (Because the disks take a few seconds to regain full speed, you may notice a slight delay the next time you access the hard-disk drive.)

When Power Management is set to Disabled (the default), the disks spin constantly as long as the system is turned on.

Table 2-2. Power Time-Out Periods

Power Management Setting	EIDE Drive Spindown Time-Outs	Monitor Standby Time-Outs	Monitor Off Time-Outs
Disabled	Never	Never	Never
Maximum	20 minutes	10 minutes	1 hour
Regular	20 minutes	20 minutes	1 hour
Minimum	20 minutes	1 hour	Never

Asset Tag

Asset Tag displays the customer-programmable asset tag number for the system if an asset tag number has been assigned. You can use the Asset Tag utility, which is included with your software support utilities, to enter an asset tag number up to ten

characters long into NVRAM. For information on using the utility, see "Using Drivers and Utilities" in your online *System User's Guide*.

System Data Categories

The following categories, which are not selectable, display information about the system:

- The microprocessor type and BIOS level are listed in the system data boxes.
- Level 2 Cache displays the size of the integrated cache.
- Service Tag displays the system's five-character service tag number, which was programmed into NVRAM by Dell during the manufacturing process. Refer to this number during technical assistance or service calls. The service tag number is also accessed by certain Dell support software, including the diagnostics software.

Using the System Password Feature

CAUTION: The password features provide a basic level of security for the data on your system. However, they are not foolproof. If your data requires more security, it is your responsibility to obtain and use additional forms of protection, such as data encryption programs.

Your Dell system is shipped to you without the system password feature enabled. If system security is a concern, you should operate your system only with system password protection.

You can assign a system password, as described in the next subsection, "Assigning a System Password," whenever you use the System Setup program. After a system password is assigned, only those who know the password have full use of the system.

When the System Password category is set to Enabled, the computer system prompts you for the system password just after the system boots.

To change an existing system password, you must know the password (see "Deleting or Changing an Existing System Password" found later in this section). If you assign and later *forget* a system password, you must remove the computer cover to change a jumper setting that disables the system password feature (see "Disabling a Forgotten Password" found later in this chapter). Note that you erase the *setup password* at the same time.

CAUTION: If you leave your system running and unattended without having a system password assigned, or if you leave your computer unlocked so that someone can disable the password by changing a jumper setting, anyone can access the data stored on your hard-disk drive.

Assigning a System Password

Before you can assign a system password, you must enter the System Setup program and check the System Password category.

When a system password is assigned, the System Password setting shown is Enabled. When the system password feature is disabled by a jumper setting on the system board, the option shown is Disabled by Jumper. *You cannot change or enter a new system password if the Disabled by Jumper option is displayed*. When a system password is not assigned, the System Password setting shown is Not Enabled.

To assign a system password, follow these steps:

1. **Verify that the Password Status setting is set to Unlocked.**

   For instructions on changing this setting, see "Password Status" found earlier in this chapter.

2. **Highlight the System Security setting and press <Enter>.**
3. **Highlight the System Password setting and press <Enter>.**

4. **Type the desired system password in the Enter Password field and press < Enter>.**

   You can use up to seven characters in your password.

   As you press each character key (or <Spacebar> for a blank space), a placeholder appears in the field.

   The password assignment operation recognizes keys by their location on the keyboard, without distinguishing between lowercase and uppercase characters. For example, if you have an M in your password, the system recognizes either M or m as correct.

   Certain key combinations are not valid. If you enter one of these combinations, the speaker emits a beep.

   To erase a character when entering your password, press <Backspace> or the left-arrow key.

   NOTE: *To escape from the field without assigning a system password, press <Esc>.*

5. **Type the desired system password in the Confirm Password field and press < Enter>.**

   The system password is now assigned and is Enabled. You can exit the System Setup program and begin using your system. Password protection takes effect after the system reboots.

Using Your System Password to Secure Your System

Whenever you turn on your system, press the reset button, or reboot the system by pressing the <Ctrl><Alt><Del> key combination, the following prompt appears on the screen when the Password Status category is set to Unlocked:

Type in the password and...
- press <ENTER> to leave password security enabled.
- press <CTRL><ENTER> to disable password security.
Enter password:

If the Password Status category is set to Locked, the following prompt appears:

Type the password and press <Enter>.

After you type the correct system password and press <Enter>, your system boots and you can use the keyboard and/or mouse to operate your system as usual.

NOTE: *If you have assigned a setup password (see "Using the Setup Password Feature" found later in this chapter), the system accepts your setup password as an alternate system password.*

If a wrong or incomplete system password is entered, the following message appears on the screen:

** Incorrect password. **

Enter password:

If an incorrect or incomplete system password is entered again, the same message appears on the screen.

The third and subsequent times an incorrect or incomplete system password is entered, the system displays the following message:

** Incorrect password. **
Number of unsuccessful password attempts: 3
System halted! Must power down.

The number of unsuccessful attempts made to enter the correct system password can alert you to an unauthorized person attempting to use your system.

Even after your system is turned off and on, the previous message is displayed each time an incorrect or incomplete system password is entered.

NOTE: *You can use the Password Status category in conjunction with System Password and Setup Password to further protect your system from unauthorized changes. For more information, see "Password Status" found earlier in this chapter.*

Deleting or Changing an Existing System Password

To delete or change an existing system password, follow these steps:

1. **Enter the System Setup program and verify that the Password Status setting is set to Unlocked.**

   Enter the System Setup program by pressing <F2>. For instructions on changing the setting for Password Status, see "Password Status" found earlier in this chapter.

2. **Highlight the System Security setting and press <Enter>.**
3. **Highlight the System Password setting and press <Enter>.**
4. **To delete an existing system password, press <Enter> in the Enter Password field and in the Confirm Password field. To change an existing system password, type the new password in the Enter Password field and press <Enter>, and then type the new system password in the Confirm Password field and press <Enter>.**

   If a character is illegal for password use, the system emits a beep. If the system password is deleted, the System Password setting changes to Not Enabled. If the system password is changed, the System Password option remains Enabled.

   NOTE: *An existing system password can also be disabled when the system is rebooted, as explained in "Using Your System Password to Secure Your System" found earlier in this section.*

If you want to assign a new system password, follow the procedure in "Assigning a System Password" found earlier in this section.

Using the Setup Password Feature

Your Dell system is shipped to you without the setup password feature enabled. If system security is a concern, you should operate your system with setup password protection.

You can assign a setup password, as described in the next subsection, "Assigning a Setup Password," whenever you use the System Setup program. After a setup password is assigned, only those who know the password have full use of the System Setup program.

To change an existing setup password, you must know the setup password (see "Deleting or Changing an Existing Setup Password" found later in this section). If you assign and later *forget* a setup password, you need to remove the computer cover to change a jumper setting that disables the setup password feature (see "Disabling a Forgotten Password" found later in this chapter). Note that you erase the *system password* at the same time.

Assigning a Setup Password

A setup password can be assigned (or changed) only when the Setup Password category is set to Not Enabled. To assign a setup password, follow these steps:

1. **Enter the System Setup program.**
2. **Highlight the System Security category and press <Enter>.**
3. **Highlight the Setup Password category and press <Enter>.**
4. **Type the desired setup password in the Enter Password field and press < Enter>.**

   If a character is illegal for password use, the system emits a beep.

5. **Type the desired setup password in the Confirm Password field and press < Enter>.**

   The setup password is now assigned. The Setup Password category changes from Not Enabled to Enabled.

NOTES: *The setup password can be the same as the system password.*

If the two passwords are different, the setup password can be used as an alternate system password. However, the system password cannot be used in place of the setup password.

After you verify the password, the Setup Password setting changes to Enabled. The next time you enter the System Setup program, the system prompts you for the setup password.

A change to the Setup Password category becomes effective immediately (rebooting the system is not required).

Operating With a Setup Password Enabled

If Setup Password is set to Enabled, you must enter the correct setup password before you can modify the majority of the System Setup categories.

When you start the System Setup program, the System Setup screen appears with the Setup Password category highlighted, prompting you to type the password.

If you do not enter the correct password in three tries, the system lets you view, but not modify, the System Setup screen - with the following exceptions:

- You can still modify the System Date, System Time, CPU Speed, Keyboard Num Lock, and PC Speaker categories.
- If System Password is not enabled and is not locked via the Password Status category, you can assign a system password (however, you cannot disable or change an existing system password).

> **NOTE:** *You can use the Password Status category in conjunction with Setup Password to protect the system password from unauthorized changes. For more information, see "Password Status" found earlier in this chapter.*

Deleting or Changing an Existing Setup Password

To delete or change an existing setup password, follow these steps:

1. **Enter the System Setup program.**
2. **Highlight the System Security category and press <Enter>.**
3. **Highlight the Setup Password category and press <Enter>.**
4. **To delete an existing setup password, press <Enter> in the Enter Password field and the Confirm Password field. To change an existing setup password, type the new password in the Enter Password field and press < Enter>, and then type the new setup password in the Confirm Password field and press <Enter>.**

   If a character is illegal for password use, the system emits a beep. If the setup password is deleted, the Setup Password category changes to Not Enabled. If the setup password is changed, the Setup Password category remains Enabled.

5. **If you want to assign a new setup password, follow the procedure in "Assigning a Setup Password" found earlier in this section.**

Disabling a Forgotten Password

If you forget your system or setup password, you cannot operate your system or change settings in the System Setup program until you remove the computer cover, change the password jumper setting to disable the passwords, and erase the existing passwords.

To disable a forgotten password, follow these steps:

1. **Remove the computer cover according to the instructions in "Removing the Computer Cover".**

   > **CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.**

2. **Remove the jumper plug from the PSWD jumper to disable the password feature.**

Refer to Table 5-1 for jumper information and to Figure 5-6 for the location of the password jumper (labeled "PSWD") on the system board.

3. **Replace the computer cover.**
4. **Reconnect your computer and peripherals to their power sources, and then turn them on.**

   Booting your system with the PSWD jumper plug removed erases the existing password(s).

   NOTE: *After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   ALERT! Cover was previously removed.

5. **To reset the chassis intrusion detector, enter the System Setup program and reset Chassis Intrusion to Not Detected.**

   See "Chassis Intrusion" earlier in the chapter for instructions.

   NOTE: *If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

6. **In the System Setup program, verify that the password is disabled. Proceed to step 7 if you want to assign a new password.**

   NOTE: *Before you assign a new system and/or setup password, you must replace the PSWD jumper plug.*

7. **Remove the computer cover according to the instructions in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

8. **Replace the PSWD jumper plug.**
9. **Replace the computer cover, and then reconnect the computer and peripherals to their power sources and turn them on.**

   Booting with the PSWD jumper installed reenables the password feature. When you enter the System Setup program, both password categories appear as Not Enabled, meaning that the password feature is enabled but that no password has been assigned.

   NOTE: *After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   ALERT! Cover was previously removed.

10. **To reset the chassis intrusion detector, enter the System Setup program and reset Chassis Intrusion to Not Detected.**

    See "Chassis Intrusion" earlier in the chapter for instructions.

    NOTE: *If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

11. **Assign a new system and/or setup password.**

    To assign a new system password, see "Assigning a System Password" found earlier in this chapter. To assign a new setup password, see "Assigning a Setup Password" found earlier in this chapter.

Responding to Error Messages

If an error message appears on your monitor screen while the system is booting, make note of the message. Then, before entering the System Setup program, refer to your *Diagnostics and Troubleshooting Guide* for an explanation of the message and suggestions for correcting any errors. However, it is normal to receive an error message the first time you boot the system after a memory upgrade. In that case, you do not need to refer to the *Diagnostics and Troubleshooting Guide*; instead, refer to the instructions in "Adding Memory" in this guide.

If you are given an option of pressing either <F1> to continue or < F2> to run the System Setup program, press the <F2> key.

Using the ISA Configuration Utility: Dell™ OptiPlex™ E1 Managed PC

Overview

The ISA Configuration Utility (ICU) is used by the system to track what expansion cards are installed and what resources are used. With this information, the system automatically configures Plug and Play expansion cards and Peripheral Component Interconnect (PCI) expansion cards and can tell you how to configure non-Plug and Play Industry-Standard Architecture (ISA) expansion cards manually by setting jumpers or switches. Plug and Play and PCI expansion cards do not contain jumpers and switches; they are configured only through software.

CAUTION: The ICU is intended only for configuring non-Plug and Play ISA expansion cards. It should not be used for assigning resources to Plug and Play expansion cards and PCI expansion cards. These cards should be configured automatically by the basic input/output system (BIOS).

NOTES: *The Microsoft Windows NT operating system does not provide full Plug and Play support. Therefore, some Plug and Play cards (such as modem, sound, and network cards) may not work with Windows NT. If your system is running a Dell-installed Windows NT operating system and you want to use Plug and Play expansion cards, Dell recommends that you use the card manufacturer's configuration utility to set the card to legacy mode, enter the card's resources through the manufacturer's utility, and then use the ICU to add the Plug and Play expansion card to your system configuration. On systems with a Dell-installed Windows NT operating system, the ICU is installed on the hard-disk drive as a diskette image. Use the Dell Program Diskette Maker (in the Dell Accessories folder) to make an ICU diskette from this diskette image.*

If you are using the Microsoft Windows 95 operating system, the functions provided by the ICU are handled by the Device Manager, which can be accessed by double-clicking the System icon in the Control Panel. See your Windows 95 documentation for instructions on using the Device Manager to manage resources and resolve conflicts.

The remainder of this chapter describes the various features of, and the various ways to use, the ICU.

Quick Start

To quickly get started using this utility, follow these steps:

1. **Determine whether you need to run the ICU.**

   See "When to Run the ICU" found later in this chapter for detailed instructions.

2. **Perform any required preparatory steps before starting the utility.**

   Preparatory steps include making a program diskette, copying your mouse driver to this diskette, and making a backup copy of this diskette. See "Preparing to Use the ICU" found later in this chapter for detailed instructions.

3. **Start the system using your ICU diskette.**

   Verify that the Boot Sequence category in the System Setup program is set to Diskette First. Then insert the backup copy of the ICU diskette into drive A, and turn on your computer or press the reset button.

   NOTE: *The ICU takes a few minutes to load. During this time, the cursor may appear as an hourglass rather than as an pointer.*

   When the utility has finished loading, the ICU window (see Figure 3-1) is displayed.

4. **Add, modify, or remove a card, or view resources for a card or other device.**

   Depending on what you need to accomplish with the ICU, you may need to perform one or more of these tasks:

   - If you are adding a non-Plug and Play ISA expansion card, see your online *System User's Guide* or "Adding a Listed Card" found later in this chapter for detailed instructions. If the card you are adding does not have a configuration file, see your online *System User's Guide* or "Adding an Unlisted Card" found later in this chapter for detailed instructions.
   - If you are modifying a card that is already installed, see your online *System User's Guide* or "Modifying a Card" found later in this chapter for detailed instructions.
   - If you are removing a card, see your online *System User's Guide* or "Removing a Card" found later in this chapter for detailed instructions.
   - If you want to examine the resources already assigned in the system, see your online *System User's Guide* or "Viewing Resources" found later in this chapter for detailed instructions.

5. **Save your configuration, and exit the utility.**

   See your online *System User's Guide* or "Saving the System Configuration" and "Exiting From the ICU" found later in this chapter for detailed instructions.

About the ICU

Before your system was shipped from Dell, a technician used the ICU to enter the correct information for the expansion cards initially installed in your computer.

If your system was shipped with Dell-installed software, the ICU diskette image (from which you can make an ICU diskette) is installed on your hard-disk drive. (Your system may also be accompanied by an *ISA Configuration Utility Diskette*.)

The ICU is also available through online services such as Dell's TechConnect bulletin board service (BBS). See your online *System User's Guide* or the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide* for information on accessing the BBS.

Whenever you add or remove a non-Plug and Play ISA expansion card, use the ICU to reconfigure your system. The utility reads the card's corresponding configuration file (**.cfg** file), which describes the card's characteristics and required system resources. After the resources identified in these configuration files are assigned to all non-Plug and Play ISA expansion cards, the system assigns resources to all Plug and Play expansion cards, as well as PCI expansion cards, thereby creating a conflict-free configuration.

ICU Database

The ICU provides a database of configuration files for a large variety of non-Plug and Play ISA expansion cards. The database is located in the **\ db** subdirectory. Listed cards are non-Plug and Play ISA expansion cards that have configuration files stored in this database.

Unlisted cards are non-Plug and Play ISA expansion cards that do not have configuration files stored in the ICU database. Unlisted cards are not displayed in the list of cards provided for the various card categories. The unlisted cards may be cards for which no configuration file exists or new cards that include a manufacturer-supplied configuration file on diskette.

When you supply a configuration file and the ICU is running from the hard-disk drive, the configuration file is copied to the directory that contains the rest of the ICU database.

When to Run the ICU

Whenever you add or remove non-Plug and Play ISA expansion cards, you must run the ICU to ensure that no two cards attempt to use the same resources (such as interrupt request [IRQ] lines).

Run the program before adding or removing any non-Plug and Play ISA expansion cards. The ICU can identify and resolve any resource conflicts and indicate the proper jumper and switch settings for each expansion card to avoid such conflicts. Running the program first helps you determine how to configure a non-Plug and Play ISA expansion card before you install it in your computer.

After you have run the ICU for your non-Plug and Play ISA expansion cards and it has configured all your Plug and Play and PCI expansion cards, you can use the utility to lock the configuration of your Plug and Play and PCI expansion cards so that they are always assigned the same resources. See your online *System User's Guide* or "Locking and Unlocking Cards" found later in this chapter for details.

Preparing to Use the ICU

Before using the ICU for the first time, you must complete the following steps:

1. **If your system includes Dell-installed software, make a program diskette of the utility from the diskette image on your hard-disk drive.**

   NOTE: *If you received an ISA Configuration Utility Diskette with your system, skip to step 2.*

   For instructions on how to create a program diskette from the diskette image, see the online help provided in the Program Diskette Maker, which is available in the Dell Accessories folder.

2. **If you want to use your mouse with the ICU, copy your mouse driver file (**mouse.exe**) to your ICU diskette.**
3. **Make a backup copy of your ICU diskette, as described in the next subsection, "Backing Up the ICU Diskette."**

   Use the backup copy whenever you run the utility; store the original diskette in a safe place.

Backing Up the ICU Diskette

Before using the ICU, make a backup copy of the ICU diskette by performing the following steps.

NOTE: *If you received an* ISA Configuration Utility Diskette *with your system, use this procedure to create a backup of that diskette.*

1. **Make sure you have a blank, high-density, 3.5-inch diskette.**
2. **Turn on your computer system if it is not already on.**
3. **Make a copy of the ICU program diskette.**

   See your operating system documentation for instructions on making a copy of a diskette.

4. **Store your original ICU diskette in a safe place.**

   Use only the backup diskette when running the ICU.

Starting the ICU

After you have completed the procedures in "Preparing to Use the ICU" found earlier in this chapter, insert the backup copy of the ICU diskette into drive A. Then either turn on your system or reboot it by pressing the reset button.

Accessing Help

You can access online help in the ICU in four ways:

- Select Contents from the Help menu to display a list of topics. Select a topic and click Help. Help text on that topic appears in a dialog box.
- For most dialog boxes, you can click Help to display information on the action you are performing.
- From the ICU window, press the <F1> key to display a list of available help topics.
- To redisplay the last message you received from the ICU, select Previous Message from the Help menu.

Making Selections in the ICU

The ICU window is the main window of the utility and the starting point for making expansion-card changes. This window lists all non-Plug and Play ISA, Plug and Play, and PCI expansion cards currently installed in the computer. The ICU window contains menus and a tool bar, as shown in Figure 3-1. When you choose a course of action, the ICU displays dialog boxes to guide you through the various steps.

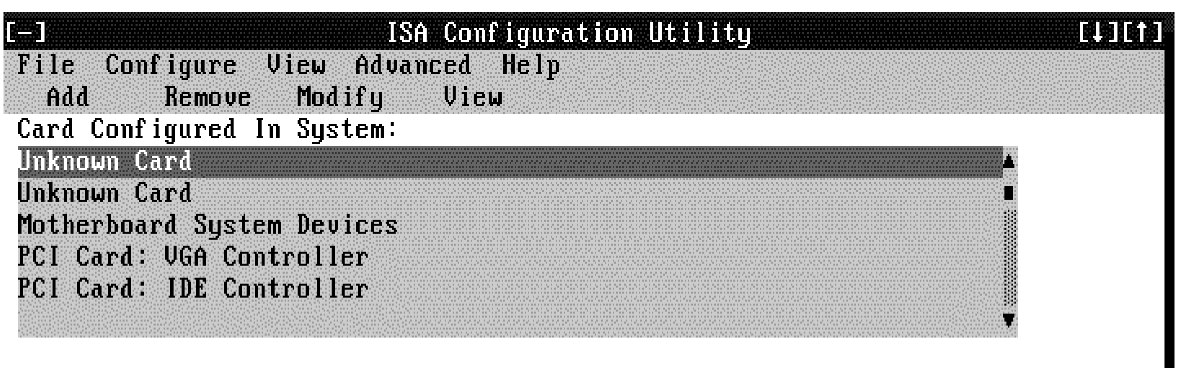


Figure 3-1. ICU Window

You can maneuver through each menu and dialog box using a mouse. If a mouse is not available, you can use the keys shown in Table 3-1.

Each menu and menu option has an underlined character in its name; when you press the <Alt> key in conjunction with the key for the underlined character, the associated menu or menu option is selected.

Table 3-1. ICU Keys

Key(s)	Action
<Alt><x><y>	Displays the menu containing the underlined letter x and performs the operation indicated by the menu item containing the underlined letter y. For example, to save a file (that is, to display the File menu and select the Save menu option), press <Alt><f> and <s>.
<Tab>	Moves from one control button or list to another.
Up- and down-arrow keys	Moves up and down through items in a list.
<Spacebar>	Highlights an item in a list.
<Enter>	Selects the highlighted button or item in a list.

Adding a Listed Card

NOTE: *If you want to add a configuration file that you received on diskette with a new expansion card, you must copy the configuration file to the* ***\db*** *subdirectory on the backup copy of the ICU diskette. You should then reboot your system and perform the following procedure to add the expansion card.*

To add a listed card with the ICU, follow these steps:

1. **Start the ICU as described in "Starting the ICU" found earlier in this chapter.**
2. **From the ICU window, click Add or select Add Card from the Configure menu.**
3. **Click the name of the category of card that you want to add. If you clicked Add in step 2, click OK.**

   A dialog box like the one in Figure 3-2 appears, listing the names of all available cards of that type.

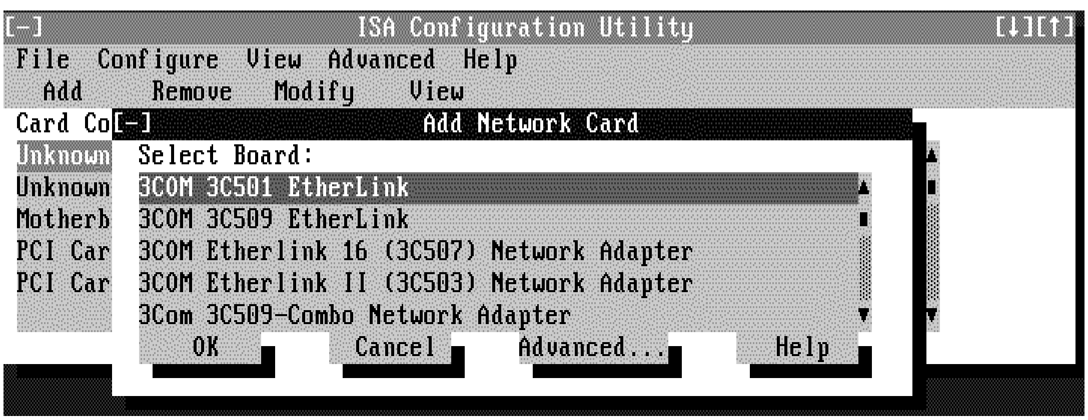


Figure 3-2. Add Network Card Dialog Box

4. **Select the name of the card you want to add.**

   If the card is not listed, see the next section, "Adding an Unlisted Card."

5. **If you want the ICU to select the resources for the card, click OK. Otherwise, skip to step 6.**

The ICU uses the default resources set by the card manufacturer whenever possible. If the ICU cannot find a resource that is valid for the card and available in the system, the utility generates an error message. See "ISA Configuration Utility Messages," for an explanation of the message and a possible solution to the conflict.

If you are satisfied with the default resources assigned to the card, you can skip the remainder of this procedure.

6. **To select the resources yourself, click Advanced.**

   The Card Configuration dialog box (see Figure 3-3) displays all resources used by the card. Some cards have multiple functions, each having one or more resources associated with it. For example, a communications card can have fax, modem, and scanner functions, each of which may have one or more associated resources.

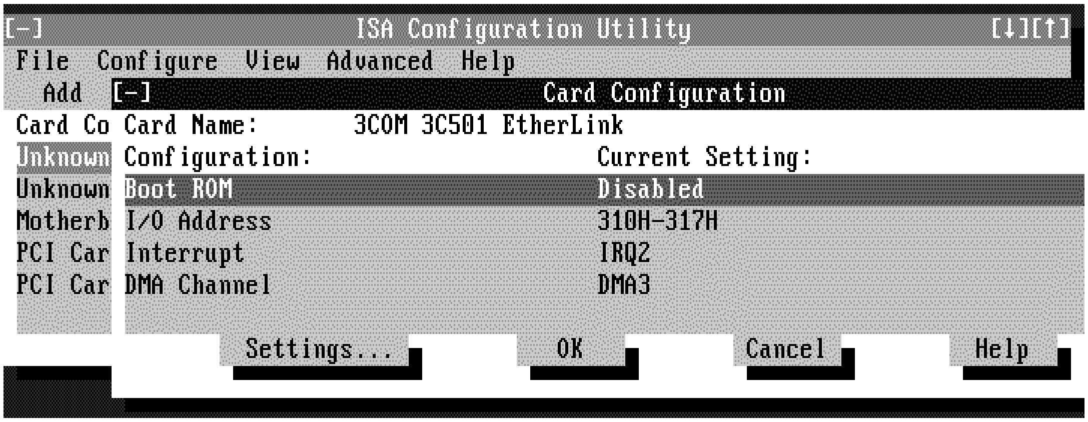


Figure 3-3. Card Configuration Dialog Box

7. **To change any of the resource settings for the card, select the resource setting and then click Settings.**

   The Configuration Settings dialog box (see Figure 3-4) displays the name of the resource that you selected in the upper-left corner of the box. The resource values currently associated with the selected function are displayed in the Resources for Choice box. The resource values displayed are IRQ, DMA, Memory (Hex), and I/O Port (Hex).

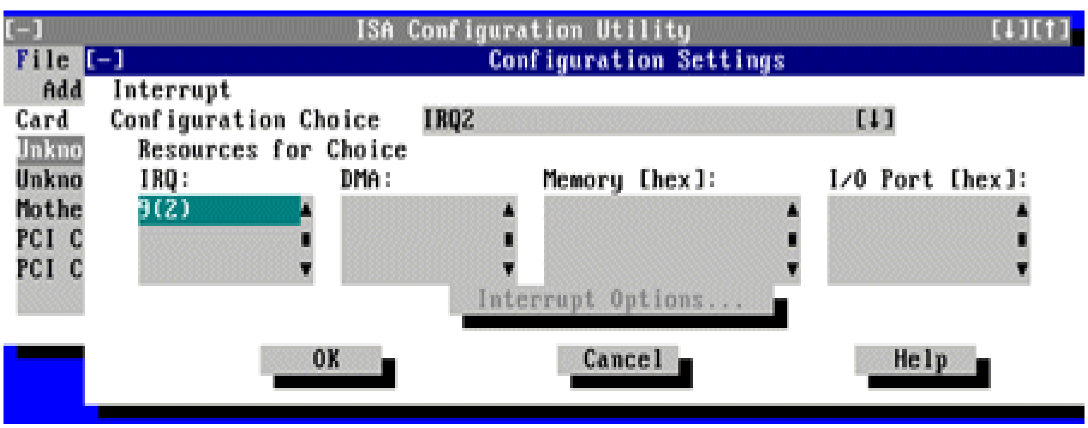


Figure 3-4. Configuration Settings Dialog Box for Assigning an IRQ Line

8. **To change the resource settings, click the down arrow next to the Configuration Choice box. Then click the new resource setting from the list of available settings (see Figure 3-5).**

   You cannot manually enter a value; you must choose a setting from the list. If there is only one setting listed, no other settings are available.

   The setting that you select may affect the resources available. For example, if you are offered the Disabled option and select

it, all resource values are blank, indicating that a disabled setting uses no resources.

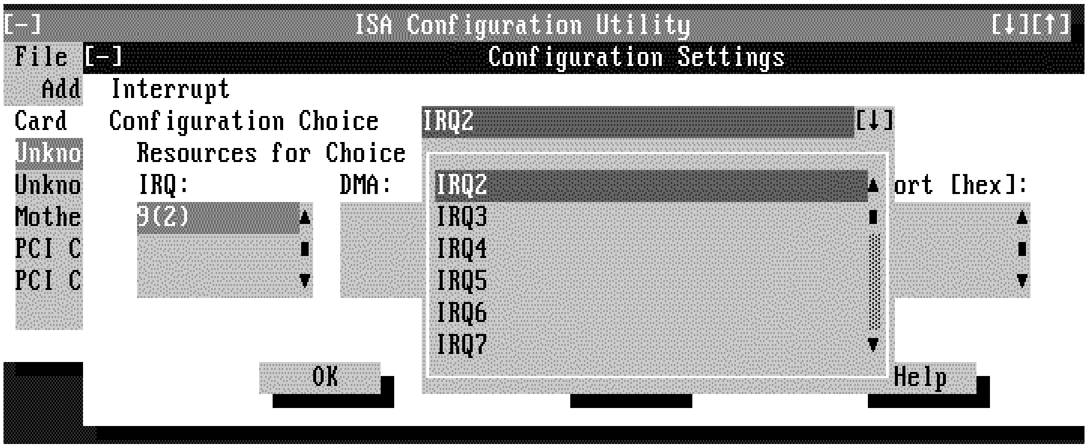


Figure 3-5. Available Settings List Box

9. **To change individual resource values for the current configuration setting, select the resource value that you want to change and click the Options button located below the resource values (see Figure 3-6).**

   For example, when you click the value under DMA, the Options button changes to the DMA Options button. When you click this button, a smaller dialog box appears. By clicking the down arrow next to the current resource value, you can display a list of the available values for the resource.

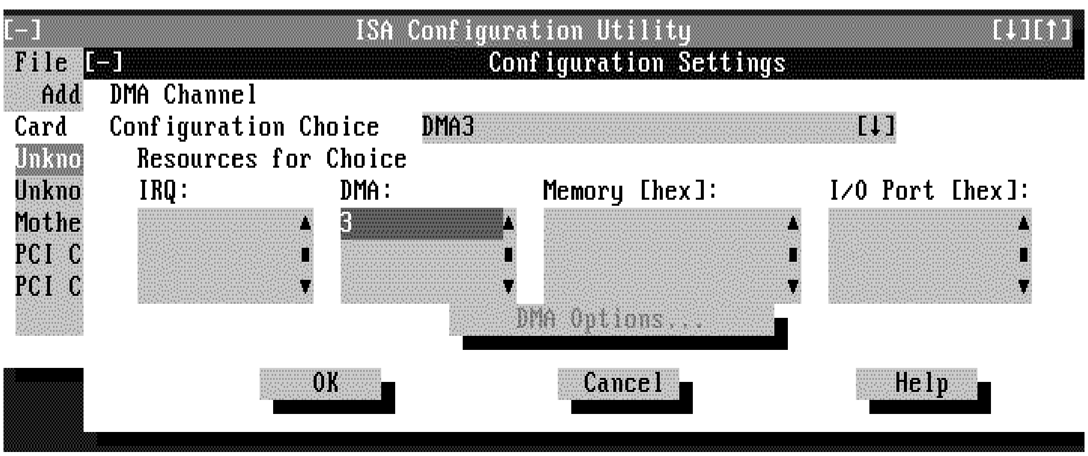


Figure 3-6. Configuration Settings Dialog Box for Assigning a DMA Channel

   Choose the desired value and click OK. The value you selected is displayed under the resource heading in the Configuration Settings dialog box.

   The Options button is disabled if no alternative values are available for the selected resource.

   NOTE: *If you change one or more resource values using the Options button and later change the setting in the Configuration Choice box, the changes that you made to the resource values are overwritten by the default values for the new configuration choice.*

10. **Click OK in the Configuration Settings dialog box when you have finished selecting resources for the function.**

NOTE: *After modifying the system configuration, you must turn off the system to install, remove, or change jumper settings on the non-Plug and Play ISA expansion cards to match the settings you selected in the ICU.*

Adding an Unlisted Card

Unlisted cards are non-Plug and Play ISA expansion cards that do not have configuration files stored in the ICU database.

NOTE: *If you want to add a configuration file that you received on diskette with a new expansion card, see "Adding a Listed Card" found earlier in this chapter.*

To add an unlisted card with the ICU, follow these steps:

1. **Start the ICU as described in "Starting the ICU" found earlier in this chapter.**
2. **From the ICU window, click Add or select Add Card from the Configure menu.**
3. **Click the name of the category of card that you want to add. If you clicked Add in step 2, click OK.**

   A dialog box appears listing the names of all available cards of that type.

4. **Select Unlisted Card from the bottom of the list of cards displayed in the dialog box that appears. Then click OK.**
5. **Click No when the ICU asks if you have a configuration file for the card.**

   The Configure Unlisted Card dialog box appears with blank fields.

6. **Enter the name of the card that you want to add in the Card Name field.**
7. **For each resource you want to assign to the card, click the box beneath the name of the resource to be assigned and then click Add.**

   For example, if you click the box beneath IRQ, the button changes to Add Interrupt. When you click this button, a Specify dialog box (in this case, Specify Interrupt) appears. Figure 3-7 shows the Configure Unlisted Card dialog box with the Specify Interrupt dialog box opened.

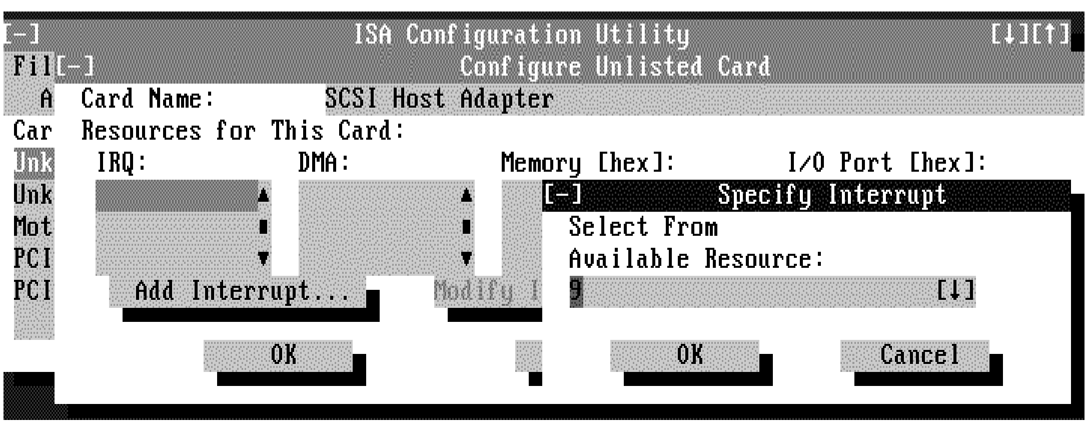


Figure 3-7. Specify Interrupt Dialog Box

If you are providing a value for the interrupt request (IRQ) or direct memory access (DMA) resource, click the down arrow beneath Available Resources. A smaller Specify list box appears (see Figure 3-8). Click the value you want to assign to the resource. Then click OK.

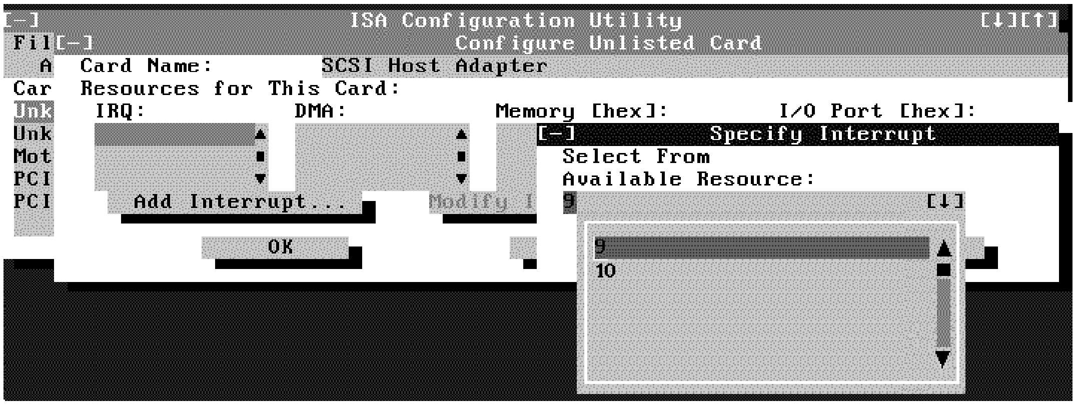


Figure 3-8. Specify Interrupt List Box

If none of the values for the DMA or IRQ resources match the allowable values for your unlisted card (as indicated in the card's documentation), select one of the available values offered by the utility and click OK.

If you are providing values for the input/output (I/O) port or memory resources, you must enter the starting and ending addresses in hexadecimal format using the two fields provided by the Specify Memory or Specify I/O Port dialog box (see Figure 3-9). Click each box in succession to enter the beginning and ending addresses, and then click OK to complete the selection.

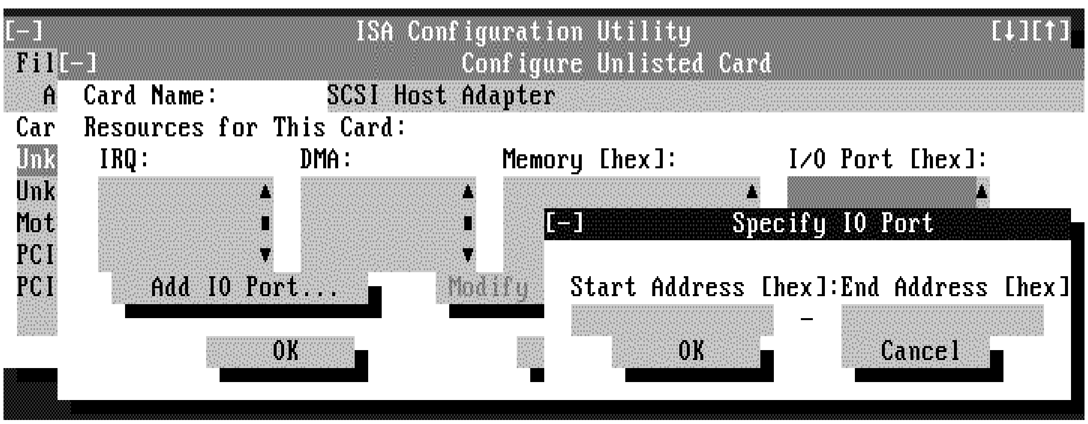


Figure 3-9. Specify I/O Port Dialog Box

8. **When you have finished selecting resources for the unlisted card, click OK in the Configure Unlisted Card dialog box.**

   A message box appears, notifying you either that the card is using its default settings or that it cannot use its default settings and must be reconfigured.

9. **Click OK. If the card must be reconfigured, record the resource settings recommended by the ICU. Click Close to accept the resource settings currently displayed.**
10. **If you had to assign a disallowed resource value to the card in steps 7, 8, and 9, click each of the other cards, and then click View until you find another card using a resource value that is allowed for the unlisted card. Reassign the resource setting for this other card using the procedure in the next section, "Modifying a Card." Then modify the resource settings for the unlisted card so that it uses an allowable value.**

NOTE: *After modifying the system configuration, you must turn the system off to install, remove, or change jumper settings on the non-Plug and Play ISA expansion cards to match the settings you selected in the ICU.*

Modifying a Card

Modifying a card allows you to change the system resources used by a card. This feature is helpful when you want to add a card that requires resources already in use by other cards or devices in your computer. You can allocate different resources to the cards currently in your computer to free the resources necessary for the card you want to install.

You can also use this feature to force Plug and Play or PCI expansion cards to use specific resource values. This procedure is called *locking* a card. You should lock a card only if it uses static device drivers. See "Locking and Unlocking Cards" found later in this chapter for more information.

NOTE: *You cannot modify the resources of a Plug and Play or PCI expansion card. You can only view the resources currently assigned and lock or unlock them.*

To modify the resource settings for a listed or unlisted card, follow these steps:

1. **Start the ICU as described in "Starting the ICU" found earlier in this chapter.**
2. **Select the card from the list of installed cards in the ICU window, and choose Modify Card from the Configure menu or click Modify.**

   If the Card Configuration dialog box appears, the selected card is listed (it has a configuration file in the ICU database). Continue with step 3.

   If the Configure Unlisted Card dialog box appears, the card is unlisted (it does not have a configuration file). Proceed to step 5.

   NOTE: *When you modify an unlisted card, the ICU cannot show you the valid resources for the card. Therefore, you must have documentation from the card manufacturer that describes the resources and resource settings that the card can use.*

3. **Follow steps 7 through 9 in "Adding a Listed Card" found earlier in this chapter. Then continue with step 4 of this procedure.**
4. **Click OK to complete the card modifications and return to the ICU window.**

   You have completed this procedure; do not proceed to step 5.

5. **To add, modify, or remove a resource value, select the box beneath the resource to be assigned, and then click Add, Modify, or Remove, respectively.**

   For example, if you click the box beneath IRQ, the Add, Modify, and Remove buttons change to Add Interrupt, Modify Interrupt, and Remove Interrupt. When you click one of these buttons, a smaller Specify list box (in this case, Specify Interrupt) appears.

   If you are providing a value for the IRQ or DMA resource, click the down arrow beneath Available Resources. Click the value you want to assign to the resource. If the resource can be shared with another card or device, click Sharable. Then click OK.

   If none of the values for the DMA or IRQ resource match the allowable values for your unlisted card (as indicated in the card's documentation), select one of the available values offered by the utility and click OK.

   If you are providing values for the I/O port or memory resource, you must enter the starting and ending addresses in hexadecimal format using the two fields provided by the Specify Memory or Specify I/O Port dialog box.

6. **When you have finished selecting resources for the unlisted card, click OK in the Configure Unlisted Card dialog box.**

   A message box appears, notifying you either that the card is using its default settings or that it cannot use its default settings and must be reconfigured.

7. **Click OK. If the card must be reconfigured, record the resource settings recommended by the ICU. Click Close to**

accept the resource settings currently displayed.

8. **If you had to assign a disallowed resource value to the card in steps 5, 6, and 7, click each of the other cards, and then click View until you find another card using a resource value that is allowed for the unlisted card. Reassign the resource setting for this other card. Then modify the resource settings for the unlisted card so that it uses an allowable value.**

NOTE: *After modifying the system configuration, you must turn off the system to install, remove, or change jumper settings on the non-Plug and Play ISA expansion cards to match the settings you selected in the ICU.*

Removing a Card

Before you remove a non-Plug and Play ISA expansion card from your computer, you must use the ICU to remove the card from the system configuration.

NOTE: *When you remove a Plug and Play or PCI expansion card from your computer, you do not need to run the ICU. To remove a Plug and Play or PCI expansion card, complete steps 2 through 9 in "Removing an Expansion Card".*

To remove a non-Plug and Play ISA expansion card from your computer, follow these steps:

1. **Start the ICU as described in "Starting the ICU" found earlier in this chapter.**
2. **Select the card from the current system configuration list in the ICU window.**
3. **Select Remove Card from the Configuration menu, or click Remove.**

   The ICU requests verification that you want to remove the card.

4. **Click Yes to free the resources allocated to the card and remove the card name from the list of active cards, or click No to cancel the operation.**

   The ICU returns to the ICU window.

   CAUTION: After removing a card from the system configuration using the ICU, you must turn off the system and physically remove the card. Failure to do so can damage your system.

5. **Remove the non-Plug and Play ISA expansion card from the computer.**

   See "Removing an Expansion Card" for instructions.

Viewing Resources

The ICU displays all resources currently used by your system.

To view all system resources, select System Resources from the View menu or click View. The System Resource Usage dialog box (see Figure 3-10) displays all resources currently used by the system.

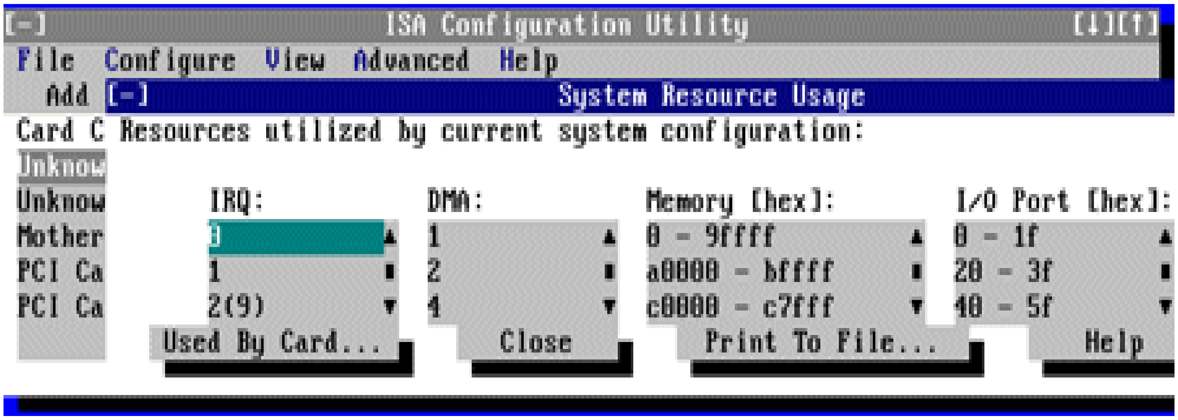


Figure 3-10. System Resource Usage Dialog Box

To determine which card uses a particular resource shown in the System Resource Usage dialog box, select the resource in question and then click Used By Card. The Card Resource Usage dialog box appears with the information.

To view the resources that a particular card is using, select the card from the list displayed in the ICU window, and then select Card Resources from the View menu or click View. The Card Resource Usage dialog box displays the resources assigned to that card. Figure 3-11 shows resources that might be assigned to a network adapter card.

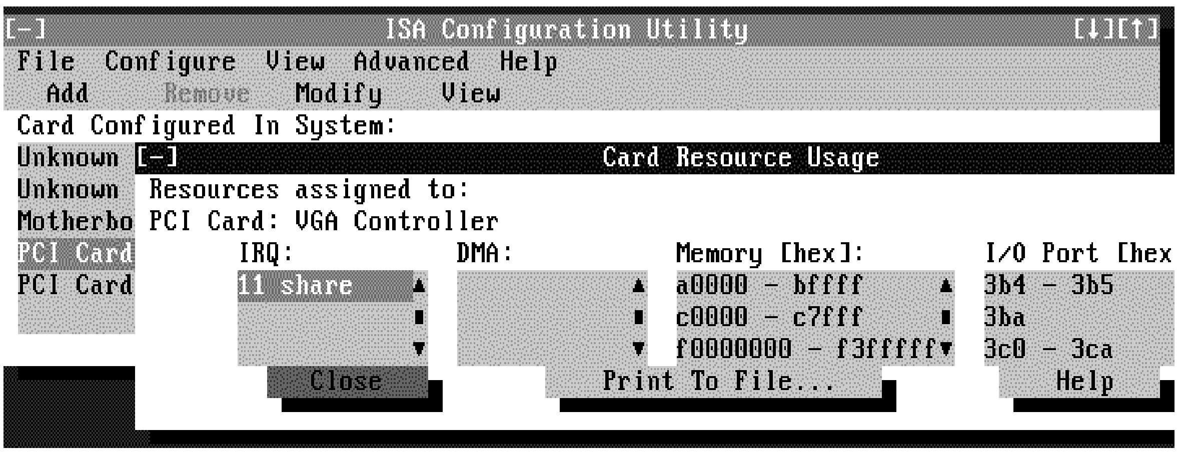


Figure 3-11. Card Resource Usage Dialog Box

You can save the information displayed in the resource usage dialog box by clicking Print To File. The ICU then prompts you for a filename.

Saving the System Configuration

You can save the system configuration to nonvolatile random-access memory (NVRAM) as you configure each card's resources. To do so, select Save from the File menu and continue with your operation.

Exiting From the ICU

At the ICU window, select Exit from the File menu to exit the utility. If you have made any changes to the system configuration, you are asked whether you want to save the changes.

If you click Yes, the ICU saves the updated system configuration information into NVRAM. If you click No, you exit the ICU without saving any of your configuration changes. If you click Cancel, nothing is saved and the utility continues to operate.

Locking and Unlocking Cards

The ICU includes a locking mechanism that enables you to allocate the system resources for all or for some functions of Plug and Play and PCI expansion cards. These expansion cards are *dynamic*, which means that they are allocated resources at system start-up. Device drivers that do not support this dynamic card configuration are referred to as *static device drivers*.

To determine whether your expansion card has static device drivers, check the documentation that came with the drivers. If you are using a static device driver, you need to permanently associate resources with a Plug and Play expansion card, instead of relying on the default Plug and Play behavior. Otherwise, the device driver might not be able to find the card the next time the system boots. This procedure is referred to as *locking* a card.

NOTE: *The locking feature of the ICU is valid only for Plug and Play and PCI expansion cards.*

Locking and Unlocking All Resources

To lock or unlock all the resources and configurations for a Plug and Play or PCI expansion card, follow these steps:

1. **If it is not already installed, install the Plug and Play or PCI expansion card. Then turn on the system.**

   Complete steps 2 through 9 in "Installing an Expansion Card".

2. **Start the ICU.**

   See "Starting the ICU" found earlier in this chapter.

3. **Select Locking Enabled from the Advanced menu in the ICU window.**

   A check mark next to Locking Enabled signifies that the feature is active; a Lock button appears on the tool bar.

4. **Select the Plug and Play or PCI expansion card that you want to lock or unlock from the Cards Configured in System list.**
5. **Click Lock or select Lock/Unlock Card from the Advanced menu.**

   Both options toggle the lock state of the selected card.

Locking and Unlocking Configuration Resources

You can also lock and unlock individual resources for a Plug and Play or PCI expansion card. To do so, follow these steps:

1. **If it is not already installed, install the Plug and Play or PCI expansion card. Then turn on the system.**

   Complete steps 2 through 9 in "Installing an Expansion Card".

2. **Start the ICU.**

See "Starting the ICU" found earlier in this chapter.

3. **Select Locking Enabled from the Advanced menu in the ICU window.**

   A check mark next to Locking Enabled signifies that the feature is active; a Lock button appears on the tool bar.

4. **Select the Plug and Play or PCI expansion card that you want to lock or unlock from the Cards Configured in System list.**
5. **Click Modify or select Modify Card from the Configure menu.**
6. **From the Card Configuration dialog box, select the function you want to lock or unlock.**
7. **Click Settings.**
8. **Modify the resource setting and/or resources offered on the Configuration Settings dialog box, if necessary.**

   See "Modifying a Card" found earlier in this chapter for more information.

9. **Select Lock Resources.**

   The Lock Resources box toggles the lock state of the selected configuration setting.

10. **Repeat steps 6 through 9 for any other configuration settings that you want to lock or unlock.**
11. **Click OK in the Card Configuration dialog box when you have finished making your selections.**

Using Integrated Devices: Dell™ OptiPlex™ E1 Managed PC

Overview   Video Controller   Audio Controller   NIC

Overview

This chapter describes the configuration software provided with your system for the following integrated devices:

- Video controller
- Optional audio controller
- Network interface controller (NIC)

See the corresponding section in this chapter for the device you want to configure or reconfigure.

Video Controller

Your system has an ATI Rage II C baseline accelerated graphics port (AGP) super video graphics array (SVGA) video controller. If your system came with a Dell-installed operating system, the video drivers for that operating system are installed on your hard-disk drive. For information on reinstalling video drivers, see "Using Drivers and Utilities" in your online *System User's Guide*. For instructions on changing to a different video driver, see your operating system documentation.

Audio Controller

Your system may have an integrated Crystal CS4236B audio controller and audio drivers for the following operating systems:

- Microsoft Windows 3.1x and Windows for Workgroups™
- Microsoft Windows 95
- Microsoft Windows NT Workstation and Server

The audio drivers for your operating system have already been installed on your hard-disk drive. For information on reinstalling audio drivers, reconfiguring the audio controller, or using the audio utilities provided with your system, see "Using the Audio Controller" in your online *System User's Guide*.

NIC

The integrated 10/100-megabit per second (Mbps) 3Com PCI 3C905b-TX Ethernet NIC provides all the functions of a separate network expansion card and supports both the 10BASE-T and 100BASE-TX Ethernet standards.

The NIC includes a Wakeup On LAN feature that enables the computer to be started up by a special LAN signal from a server management console. Wakeup On LAN provides remote computer setup, software downloading and installation, file updates, and asset tracking after hours and on weekends when local area network (LAN) traffic is typically at a minimum.

The NIC connector on the computer's back panel has the following indicators (see Figure 4-1):

- A yellow *activity indicator* flashes when the system is transmitting or receiving network data. (A high volume of network traffic may make this indicator appear to be in a steady "on" state.)
- A green *link integrity indicator* lights up when there is a good connection between the network and the NIC. When the green

indicator is off, the computer is not detecting a physical connection to the network.

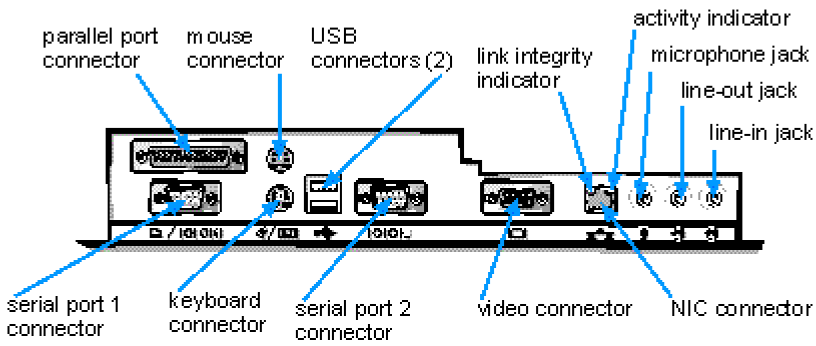


Figure 4-1. I/O Ports and Connectors

Network Cable Requirements

Your computer's NIC connector (an RJ45 connector located on the back panel) is designed for attaching an unshielded twisted pair (UTP) Ethernet cable. Press one end of the UTP cable into the NIC connector until the cable snaps securely into place.

Connect the other end of the cable to an RJ45 jack wall plate or to an RJ45 port on a UTP concentrator or hub, depending on your network configuration. Observe the following cabling restrictions for 10BASE-T and 100BASE-TX networks.

CAUTION: To avoid line interference, voice and data lines must be in separate sheaths.

- For 10BASE-T networks, use Category 3 or greater wiring and connectors.
- For 100BASE-TX networks, use Category 5 wiring and connectors.
- The maximum cable run length (from a workstation to a concentrator) is 328 feet (ft) (100 meters [m]).
- The maximum number of workstations (not counting concentrators) on a network is 1024.
- For 10BASE-T networks, the maximum number of daisy-chained concentrators on one network segment is four.

Configuring the NIC

This subsection provides instructions for configuring or reconfiguring the computer's integrated NIC under the following operating systems:

- Microsoft Windows NT
- Microsoft Windows 95
- Microsoft Windows for Workgroups
- MS-DOS®

In addition, this subsection describes how to set the network frame type manually for an Internetwork Packet Exchange/Sequenced Packet Exchange (IPX/SPX)-compatible network protocol, on systems using Windows 95 or Windows NT.

NOTES: *The NIC drivers for systems running a Dell-installed Windows NT 4.0 or Windows 95 operating system are automatically detected and installed. Instructions for reconfiguring the NIC driver are included in the following subsections.*

The 3Com EtherDisk® XL version 3.01 diskettes provided by Dell are compatible with the 3C905 family of NICs. Do not attempt to use 3Com EtherDisk XL diskettes from any other source. Use only the 3Com EtherDisk XL version 3.01 diskettes that were provided by Dell.

Windows NT 4.0 NIC

NOTE: *If you are installing the Windows NT 4.0 operating system for the first time, you must install Windows NT 4.0 Service Pack 3 and the bus-mastering enhanced integrated drive electronics (EIDE) device drivers prior to installing the Windows NT 4.0 NIC driver.*

To connect your system to, and configure it for use on, an Ethernet network, follow these steps:

1. **Use the Program Diskette Maker (located in the Dell Accessories folder) to make a diskette copy of the NIC drivers installed on your hard-disk drive.**
2. **Connect the network cable to the back of your computer.**

   See "Network Cable Requirements" found earlier in this section for more information.

3. **Verify that the NIC is enabled in the System Setup program.**

   See "Using the System Setup Program," for more information.

4. **Start Windows NT 4.0, and log in as user Administrator or as a user with Administrator privileges.**

   For information on administrative users and privileges, see your Windows NT documentation.

5. **Double-click My Computer, double-click Control Panel, and then double-click the Network icon.**

   NOTE: *If you are installing networking on your system for the first time, Win-dows NT displays a message asking if you want to install networking. Click Yes, and refer to your Windows NT documentation for instructions.*

6. **Click the Adapters tab in the Network Control Panel, and then click Add to access the Select Network Adapter window.**
7. **Click Have Disk.**
8. **Insert diskette 2 into drive A, type** a:\, **and then click OK.**
9. **Select 3Com Fast EtherLink/EtherLink XL PCI Bus-Master NIC (3C905B-TX), and then click OK.**
10. **When prompted for diskette 2, click OK.**
11. **When the operating system has finished copying files from diskette 2, click Close in the Windows Welcome screen and remove the diskette from drive A. Then click Close in the Network window.**
12. **When prompted, enter information about your specific network.**

    See your system administrator for information.

13. **Click Yes in the Network Settings Change window to restart your system.**

Windows NT 3.5x NIC

To connect your system to, and configure it for use on, an Ethernet network, follow these steps:

1. **Use the Program Diskette Maker (located in the Dell Accessories program group) to make a diskette copy of the NIC drivers installed on your hard-disk drive.**
2. **Connect the network cable to the back of your computer.**

   See "Network Cable Requirements" found earlier in this section for more information.

3. **Verify that the NIC is enabled in the System Setup program.**

See "Using the System Setup Program," for more information.

4. **Start Windows NT, and log in as user Administrator or as a user with Administrator privileges.**

   For information on administrative users and privileges, see your Windows NT documentation.

5. **Double-click the Program Manager, double-click the Main group, and then double-click the Control Panel icon.**
6. **From the Control Panel, double-click the Network icon.**

   The Network Settings window appears.

7. **From the Installed Adapters group, select the existing 3Com driver and click Remove.**
8. **Click Yes in the Network Settings dialog box.**
9. **Click Add Adapter in the Network Settings window. Then scroll to <Other> Requires Disk From Manufacturer, and click Continue.**
10. **Insert diskette 1 into drive A, type** a:\, **and then click OK.**

    The Select OEM Option dialog box appears.

11. **Select 3Com Fast EtherLink XL NIC (3C905B-TX), and then click OK.**
12. **When prompted, remove diskette 1 from the diskette drive and insert diskette 2.**
13. **Click Close in the Windows Welcome screen, and then click Close again in the Network window.**
14. **If you are prompted, enter information about your specific network.**

    See your system administrator for more information.

15. **Click Yes in the Network Settings Change window to restart your system.**

Windows 95 NIC

NOTE: *If you are installing the Microsoft Windows 95 operating system for the first time, you must use either the Windows 95 service release version provided by Dell or its equivalent. Because of the advanced architecture of your system, some components do not function correctly with Windows 95 versions earlier than Service Release 2.*

Windows 95 automatically detects and installs the NIC driver. The following instructions are for reconfiguring the NIC driver on systems running Windows 95, Service Release 2 or Service Release 2.1. To determine the service release version of your Windows 95 operating system, click the Start button, point to Settings, and click Control Panel. Double-click the System icon to access the System Properties window, and click the General tab. If your system version is 4.00.950 B, then your operating system is Windows 95 Service Release 2 or Service Release 2.1. For Windows 95 Service Release 1 or Windows 95 operating systems not installed by Dell, the system version is 4.00.950 A and 4.00, respectively.

To connect your system to, and configure it for use on, an Ethernet network, follow these steps:

1. **Use the Program Diskette Maker (located in the Dell Accessories folder) to make a diskette copy of the NIC drivers installed on your hard-disk drive.**
2. **Verify that the integrated NIC is enabled in the System Setup program and connected to its network.**

   See "Using the System Setup Program," for more information.

3. **Start Windows 95.**
4. **Click the Start button, point to Settings, and click Control Panel. Then double-click the System icon.**
5. **In the System Properties window, click the Device Manager tab.**
6. **In the list of system devices, double-click Other Devices. Then click PCI Ethernet Controller.**
7. **Click Properties to access the PCI Ethernet Controller window.**
8. **Click the Driver tab and then click Update Driver.**

   The Update Device Driver Wizard starts.

9. **Insert diskette 2 into drive A, and select Yes (Recommended).**
10. **Click Next and then click Finish to access the Insert Disk dialog box.**

11. **Click OK to access the Copying Files dialog box, and then select 3Com Fast EtherLink/EtherLink XL PCI Bus-Master NIC (3C905B-TX).**
12. **When prompted for diskette 2, click OK.**
13. **Click OK in the Insert Disk dialog box to access the Copying Files dialog box.**
14. **When you are prompted for the location of additional files, specify the** c:\windows\options\cabs **directory on your hard-disk drive or the** \win95 **directory on your CD-ROM drive. Then click OK to access the System Properties dialog box, and click OK again.**

    Windows 95 finishes copying all of the files to the system's hard-disk drive.

15. **When the System Settings Change dialog box appears, remove the diskette from drive A and click Yes to restart the system.**
16. **When the system restarts, the Enter Network Password dialog box appears. Enter the username and password you want to use for network access.**

    See your Windows 95 documentation for information about usernames and passwords.

Windows for Workgroups NIC

To connect your system to, and configure it for use on, an Ethernet network, follow these steps:

1. **Use the Program Diskette Maker (located in the Dell Accessories program group) to make a diskette copy of the NIC drivers installed on your hard-disk drive.**
2. **Connect the network cable to the back of your computer.**

    See "Network Cable Requirements" found earlier in this section for more information.

3. **Verify that the NIC is enabled in the System Setup program.**

    See "Using the System Setup Program," for more information.

4. **Start Windows for Workgroups.**
5. **In the Main program group, double-click the Windows Setup icon.**
6. **Click Continue to access the Windows Setup screen.**
7. **Select Change Network Settings from the Options menu.**
8. **From the Network Setup window, click Networks. Then click Install Microsoft Windows Network, and click OK.**
9. **Click Drivers to access the Network Drivers dialog box.**
10. **Click Add Adapter to access the Add Network Adapter dialog box.**
11. **Select Unlisted or Updated Network Adapter, and click OK.**
12. **Insert diskette 1 into drive A, type** a:\wfw311, **and click OK.**
13. **In the Unlisted or Updated Network Adapter dialog box, select 3Com EtherLink XL/Fast EtherLink XL Adapter (3C90x) and click OK.**
14. **In the Network Drivers dialog box, click Close.**
15. **In the Network Setup dialog box, enter the User Name, Workgroup Name, and Computer Name, and click OK.**
16. **Click Yes to All in the Windows Setup dialog box.**
17. **Click OK when a message is displayed on the screen stating that the system files are being updated.**
18. ***If the Install Driver dialog box appears and prompts you for the*** el90x.386 driver, **type** a:\wfw311 **and click OK to load the Network Driver Interface Specification (NDIS) 3 driver.**

    If the Install Driver dialog box appears and prompts you for the el90x.dos ***driver*****, type** a:\ndis2\dos **and click OK to load the NDIS 2 driver.**

19. **Click OK to have the operating system make backup copies of the system files.**
20. **Remove the diskette from drive A, save changes to any open files, and then click Restart Computer.**

MS-DOS NIC

To connect your system to, and configure it for use on, an Ethernet network, follow these steps:

1. **Use the Program Diskette Maker (located in the Dell Accessories program group or folder) to make a diskette copy of the NIC drivers installed on your hard-disk drive.**
2. **Connect the network cable to the back of your computer.**

   See "Network Cable Requirements" found earlier in this section for more information.

3. **Verify that the NIC is enabled in the System Setup program.**

   See "Using the System Setup Program" for more information.

4. **Configure the NIC, and install the network drivers by running the 3Com Install program (**install.exe**), located on the NIC driver diskette 1.**
5. **Run the Network Interface Test Group (**3c90xcfg.exe**), located on diskette 1.**

Setting the Network Frame Type

If your Windows 95 or Windows NT system is connected to a network, verify the following network protocol settings:

1. **Right-click the Network Neighborhood icon on the Windows desktop, and then select Properties from the pop-up menu.**
2. **Under the Configuration tab in the Network window, click IPX/SPX-Compatible Protocol if it is not already highlighted.**
3. **Click the Properties button to open the IPX/SPX-Compatible Protocol Properties window.**
4. **Click the Advanced tab, and then select Frame Type from the Property list.**
5. **Select the appropriate frame type from the Value menu, according to your network requirements.**
6. **Follow the instructions on your screen to complete the configuration.**

Working Inside Your Computer: Dell™ OptiPlex™ E1 Managed PC

Overview | Before You Begin | Removing the Computer Cover
Replacing the Computer Cover | Inside Your Computer | Removing and Replacing the Expansion-Card Cage

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Overview

Your Dell computer system supports a variety of internal options that expand system capabilities. This chapter prepares you to install options inside the computer. It describes how to remove and replace the computer cover and expansion-card cage. It also familiarizes you with the internal components you may handle if you install Dell hardware options.

Before You Begin

To make working inside your computer easier, make sure you have adequate lighting and a clean work space. If you temporarily disconnect cables or remove expansion cards, note the position of the connectors and slots so that you can reassemble the system correctly.

You will use the information in this section every time you install a hardware option inside your computer. *Read this section carefully,* because the information is not repeated in detail elsewhere in this guide.

Safety First—For You and Your Computer

Working inside your computer is safe—if you observe the following precautions.

WARNING FOR YOUR PERSONAL SAFETY AND PROTECTION OF YOUR EQUIPMENT

Before starting to work on your computer, perform the following steps in the sequence indicated:

1. **Turn off your computer and all peripherals.**
2. **Disconnect your computer and peripherals from their AC power sources. Also, disconnect any telephone or telecommunication lines from the computer. Doing so reduces the potential for personal injury or shock.**
3. **If you are disconnecting a peripheral from the computer or are removing a component from the system board, wait 5 seconds after turning off the computer before disconnecting the peripheral or removing the component to avoid possible damage to the system board.**
4. **Touch an unpainted metal surface on the computer chassis, such as the power supply, before touching anything inside your computer.**

   While you work, periodically touch an unpainted metal surface on the computer chassis to dissipate any static electricity that might harm internal components. Also avoid touching components or contacts on a card and avoid touching pins on a chip.

In addition, Dell recommends that you periodically review the safety instructions at the front of this guide.

Unpacking Your Hardware Option

When you remove an option from its shipping carton, you may find it wrapped in antistatic packing material designed to protect it from electrostatic damage. Do not remove the packing material until you are ready to install the option.

CAUTION: **Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.**

Removing the Computer Cover

To remove the computer cover, follow these steps:

1. **Turn off your computer and peripherals, and observe the *Warning for Your Personal Safety and Protection of Your Equipment* described earlier in this chapter. Also observe the safety instructions at the front of this guide.**
2. **If you have installed a padlock through the padlock ring on the cover and the back panel (see Figure 5-1), remove the padlock.**

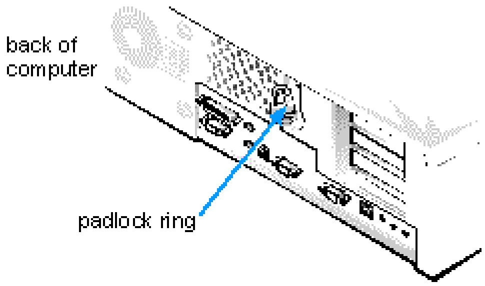


Figure 5-1. Padlock Installed

3. **Remove the floor stand if one is attached.**

   See "Using the Optional Stand for Vertical Orientation" for instructions.

4. **Remove the cover.**

   From the front of the computer, press in the two release buttons (located on the sides of the cover toward the back). With the buttons depressed, lift the cover at the back, allowing it to pivot up toward you (see Figure 5-2).

   Disengage the plastic hooks that secure the cover to the front of the chassis, and lift the cover away.

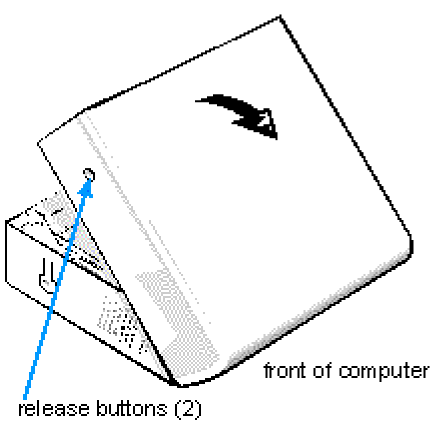


Figure 5-2. Removing the Computer Cover

Replacing the Computer Cover

To replace the computer cover, follow these steps:

1. **Check all cable connections, especially those that might have come loose during your work. Fold cables out of the way so that they do not catch on the computer cover. Make sure cables are not routed over the drive cage—they will prevent the cover from closing properly.**
2. **Check to see that no tools or extra parts (including screws) are left inside the computer's chassis.**
3. **Replace the cover.**

   Facing the left side of the computer, hold the cover at a slight angle as shown in Figure 5-3. Fit the three cover hooks into the rectangular slots on the chassis. (It may be helpful to look down into the chassis to verify that the hooks are in place.)

   Pivot the cover down toward the back and into position. Make sure that the release buttons click into place.

   NOTE: *The computer should be placed entirely on a flat surface. It is difficult to align the cover if the front of the computer is hanging over the edge of a table.*

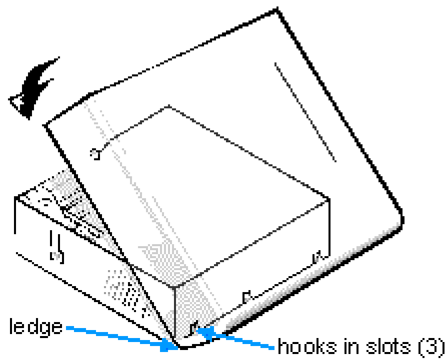


Figure 5-3. Replacing the Computer Cover

4. **If you are using the optional floor stand, reattach it.**

   See "Using the Optional Stand for Vertical Orientation" for instructions.

5. **If you are using a padlock to secure your system, reinstall the padlock.**
6. **Clear the chassis intrusion alert message.**

   Enter the System Setup program and reset Chassis Intrusion to Not Detected. See "Chassis Intrusion" for instructions.

   NOTE: *If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

Inside Your Computer

Figure 5-4 shows an overhead view of your computer to help you orient yourself when installing hardware options. Unless otherwise specified, locations or directions relative to the computer are shown.

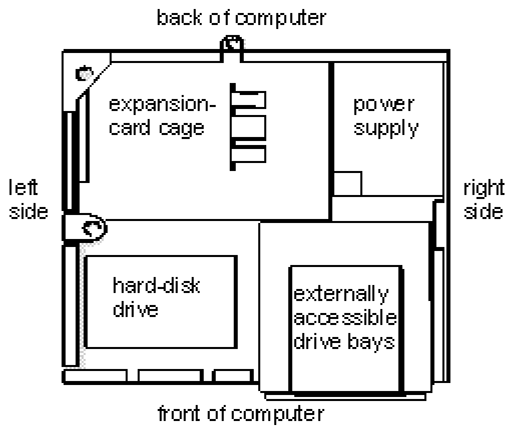


Figure 5-4. Computer Orientation View

Figure 5-5 shows your computer with its cover removed. Refer to this illustration to locate interior features and components discussed in this guide.

When you look inside your computer, note the *DC power cables* coming from the power supply. These cables supply power to the system board; to internal diskette drives, hard-disk drives, and tape drives; and to certain expansion cards that connect to external peripherals.

The flat ribbon cable in Figure 5-5 is typical of the *interface cables* for internal drives. An interface cable connects a drive to a connector on the system board or on an expansion card.

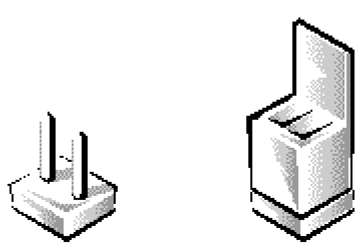
The *system board*—the large printed circuit board at the bottom of the chassis—holds the computer's control circuitry and other electronic components. Some hardware options are installed directly onto the system board.

During an installation procedure, you may be required to change a *jumper* setting on the system board and/or a jumper or *switch* setting on an expansion card or on a drive. Jumpers and switches provide a convenient and reversible way of reconfiguring the circuitry on a printed circuit board. For information on jumpers and switches, see the following two subsections.

Jumpers

Jumpers are small blocks on a circuit board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit.

To change a jumper setting, pull the plug off its pin(s) and carefully fit it down onto the pin(s) indicated.



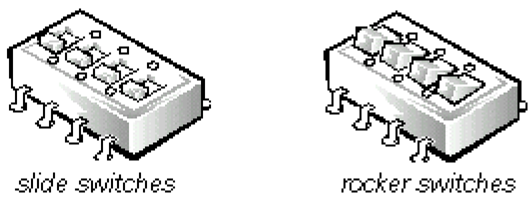
CAUTION: Make sure your system is turned off before you change a jumper setting. Otherwise, damage to your system or unpredictable results may occur.

A jumper is referred to as *open* or *unjumpered* when the plug is pushed down over only one pin or if there is no plug at all. When the plug is pushed down over two pins, the jumper is referred to as *jumpered*. In some documents, the jumper setting may be shown in text as two numbers, such as *1-2*. The number *1* is printed on the circuit board so that you can identify each pin number based on the location of pin 1.

Figure 5-6 shows the location and default settings of the jumper blocks on your system board. See Table 5-1 for the designations, default settings, and functions of your system's jumpers.

Switches

Switches control various circuits or functions in your computer system. The switches you are most likely to encounter are dual in-line package (DIP) switches, which are normally packaged in groups of two or more switches in a plastic case. Two common types of DIP switches are *slide* switches and *rocker* switches (see the following illustration).



Each of these switches has two positions, or *settings* (usually *on* and *off*). To change the setting of a slide switch, use a small, pointed object such as a small screwdriver or a straightened paper clip to slide the switch to the proper position. To change the setting of a rocker switch, use the screwdriver or paper clip to press down on the appropriate side of the switch. In either case, do not use a pen, pencil, or other object that might leave a residue on the switch.

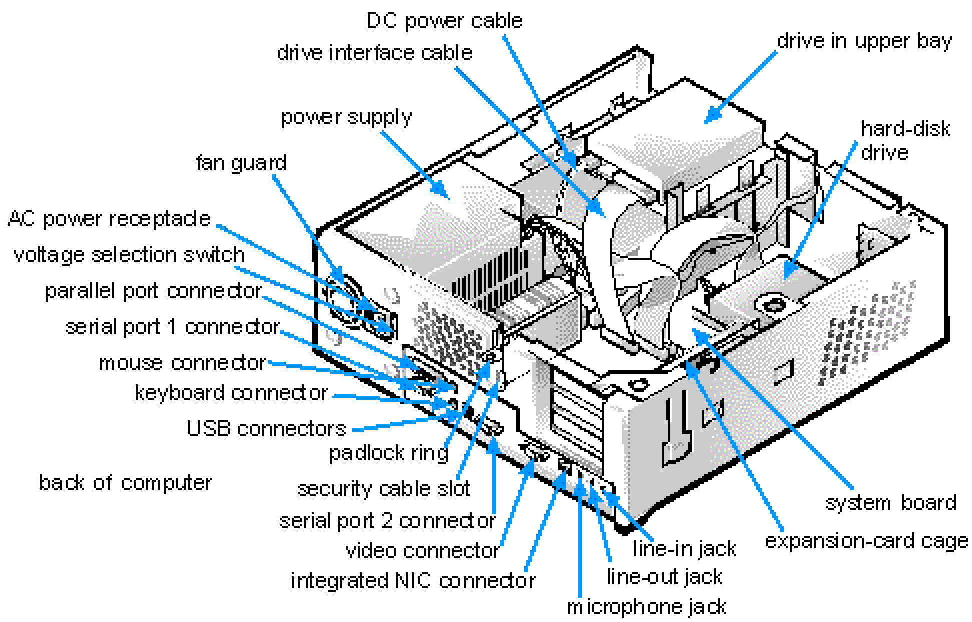


Figure 5-5. Inside the Chassis

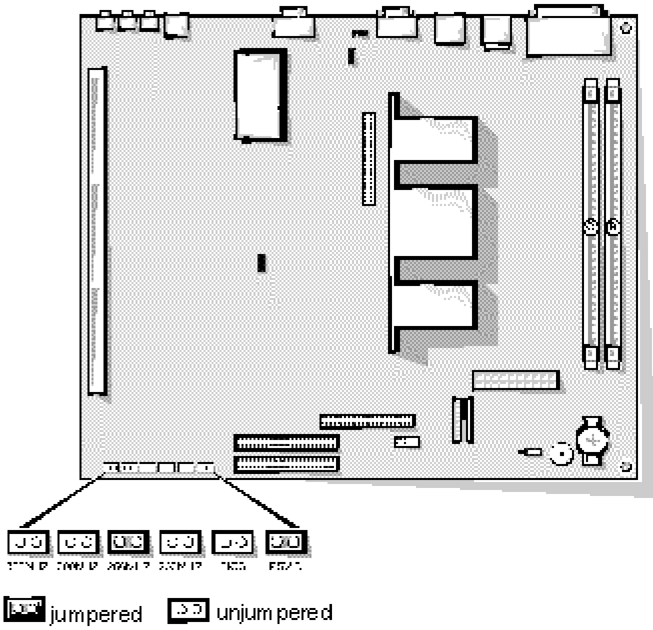


Figure 5-6. System Board Jumpers

Table 5-1. System-Board Jumper Settings

Jumper	Setting	Description
PSWD	(default)	Password features are enabled.
		Password features are disabled.
BIOS	(default)	Reserved (do not change).
233MHZ		Jumpered when the microprocessor's internal speed is 233 MHz.
266MHZ*		Jumpered when the microprocessor's internal speed is 266 MHz.
300MHZ*		Jumpered when the microprocessor's internal speed is 300 MHz.
333MHZ*		Jumpered when the microprocessor's internal speed is 333 MHz.
** One set of the speed jumper pins must have a jumper plug installed; otherwise, the system will operate at an undetermined speed.*		
NOTE: *For the full name of an abbreviation or acronym used in this table, see the Glossary in your online* System User's Guide.		
jumpered unjumpered		

System Board and Riser Board Labels

Table 5-2 lists the labels for connectors and sockets on your system board and riser board, and it gives a brief description of their functions.

Table 5-2. System Board and Riser Board Connectors and Sockets

Connector or Socket	**Description**
AMC	ATI multimedia channel connector
BATTERY	Battery socket
CD_IN	CD-ROM audio interface connector
DIMM_*x*	DIMM socket
DSKT	Diskette/tape drive interface connector
ENET	Integrated NIC connector
FAN	Microprocessor fan connector
HDLED	Hard-disk drive LED connector (on riser board)
IDE*n*	EIDE interface connector
INTRUSION	Chassis intrusion switch connector
ISA*n**	ISA expansion-card connector (on riser board)
KYBD	Keyboard connector
LINE-IN	Audio line-in jack (optional)
LINE-OUT	Audio line-out jack (amplified source; optional)
MIC	Microphone jack (optional)
MONITOR	Video connector
MOUSE	Mouse connector
P1	Wakeup On LAN power connector (on riser board)
PANEL	Control panel connector
PARALLEL	Parallel port connector; sometimes referred to as *LPT1*
PCI*n**	PCI expansion-card connector (on riser board)
POWER_1	Main power input connector
POWER_2	3.3-V power input connector
RISER	Riser board connector
SERIAL*n*	Serial port connector
SLOT1	Microprocessor connector
USB	USB connectors
VIDEO_UPGRADE	Video-memory upgrade socket

** Connector ISA1 shares a single card-slot opening with PCI2. Only one connector at a time can be used on a shared card-slot*

opening.
NOTE: *For the full name of an abbreviation or acronym used in this table, see the Glossary in your online* System User's Guide.

Removing and Replacing the Expansion-Card Cage

Your Dell computer has a removable expansion-card cage, which greatly simplifies many installation procedures by allowing you to remove the riser board and all installed expansion cards in a single step.

Removing the Expansion-Card Cage

To remove the expansion-card cage, follow these steps:

1. **Remove the computer cover as instructed in "Removing the Computer Cover" found earlier in this chapter.**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

2. **Check any cables connected to expansion cards through the back-panel openings. Disconnect any cables that will not reach to where the cage must be placed upon removal from the chassis.**
3. **Locate the securing lever (see Figure 5-7). Rotate the lever upward until it stops in an upright position.**

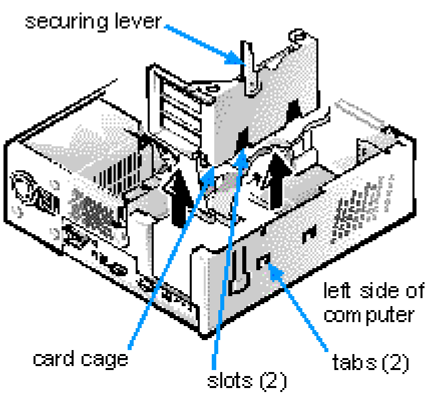


Figure 5-7. Removing the Expansion-Card Cage

4. **Slide the expansion-card cage out of the chassis.**
5. **Lift the expansion-card cage up and away from the chassis.**

Replacing the Expansion-Card Cage

To replace the expansion-card cage, follow these steps:

1. **With the securing lever in the upright position, align the slots in the left side of the expansion-card cage with the tabs on the left side of the chassis (see Figure 5-7).**
2. **Rotate the securing lever downward until it is flush with the top of the chassis. Make sure that the riser board is fully seated in the RISER connector on the system board.**
3. **Reconnect any cables you removed in step 2 of the previous procedure, "Removing the Expansion-Card Cage."**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

Installing System Board Options: Dell™ OptiPlex™ E1 Managed PC

[Overview](#) [Expansion Cards](#) [Adding Memory](#)

[Adding Video Memory](#) [Replacing the System Battery](#)

Overview

This chapter describes how to install the following options:

- Peripheral Component Interconnect (PCI) and Industry-Standard Architecture (ISA) expansion cards
- System memory
- Video memory

This chapter also includes instructions for replacing the system battery, if necessary.

Use Figure 6-1 to locate the system board features.

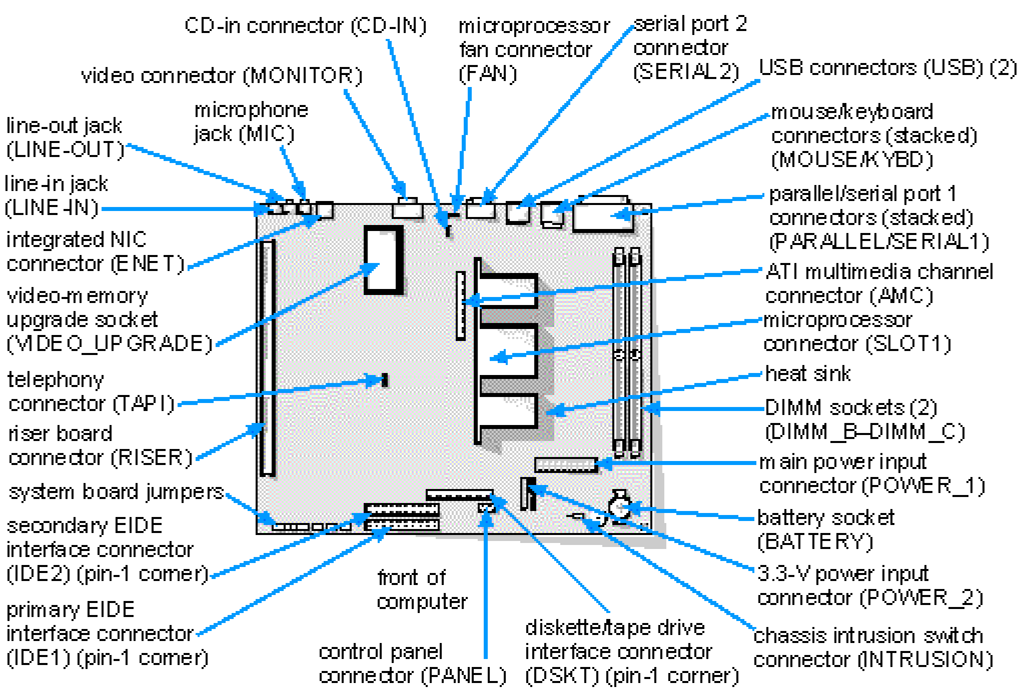


Figure 6-1. System Board Features

Expansion Cards

Expansion cards are installed on the computer's riser board (see Figure 6-3). The riser board plugs into the RISER connector on the system board (see Figure 6-1) and is considered an extension of the system board.

The system accommodates up to three expansion cards, which can be a mix of 32-bit PCI expansion cards and 8- and 16-bit ISA expansion cards. (See Figure 6-2 for examples of ISA and PCI expansion cards.)

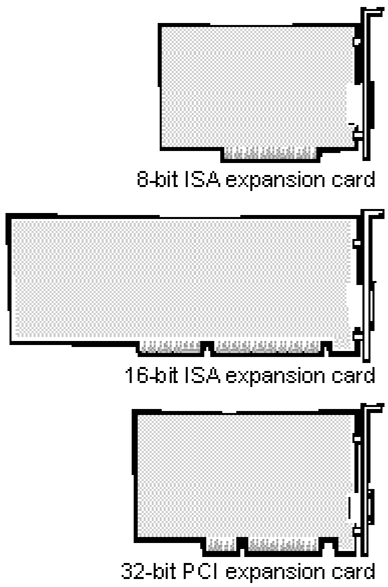


Figure 6-2. Expansion Cards

Expansion Slots

Four expansion-card connectors reside on the riser board (see Figure 6-3). Because two of the expansion-card connectors share an expansion-slot space, a maximum of three expansion cards can be installed.

- Expansion-card connectors ISA1 and ISA2 (at the top of the card) support 8- or 16-bit ISA expansion cards.
- Expansion-card connectors PCI1 and PCI2 support 32-bit PCI expansion cards.

NOTES: *Connector PCI2 shares expansion-slot space with connector ISA1, so only one card of either type can be installed in the shared slot.*

Because of the height of the hard-disk drive, expansion-card connector PCI1 is limited to an 8.75-inch-long card.

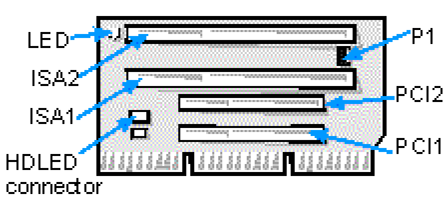


Figure 6-3. Riser-Board Expansion-Card Connectors

Installing an Expansion Card

To install an expansion card, follow these steps:

1. **If you are installing a non-Plug and Play ISA expansion card, enter the ISA Configuration Utility (ICU) and add the new expansion card to your configuration.**

See "Using the ISA Configuration Utility," for instructions.

NOTE: *If you install a PCI or Plug and Play expansion card, your system automatically performs any required configuration tasks during the boot routine.*

2. **Prepare the expansion card for installation, and remove the computer cover according to the instructions in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

   See the documentation that came with the expansion card for information on configuring the card, making internal connections, or otherwise customizing the card for your system.

3. **Remove the expansion-card cage as instructed in "Removing the Expansion-Card Cage".**

   CAUTION: Verify that the AC power cable is removed before removing the expansion-card cage.

4. **Unscrew and remove the metal filler bracket that covers the card-slot opening for the expansion-card connector you intend to use (see Figure 6-4).**

   Save the screw to use when installing the expansion card later in this procedure.

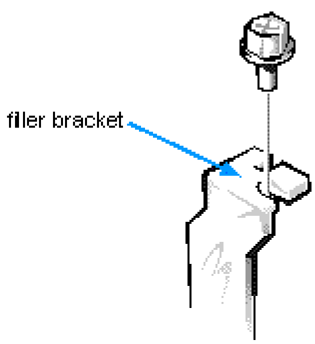


Figure 6-4. Removing the Filler Bracket

5. **Install the expansion card.**

   Insert the card-edge connector firmly into the expansion-card connector on the riser board. Gently rock the card into the connector until the card is fully seated (see Figure 6-5).

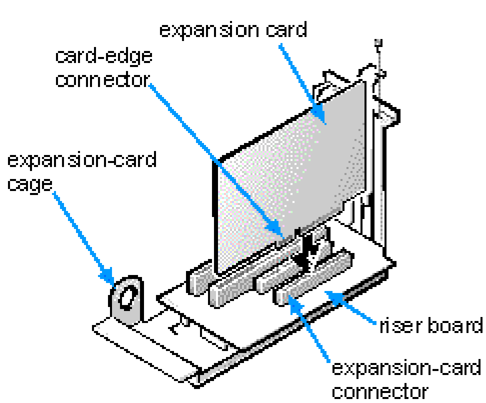


Figure 6-5. Installing an Expansion Card

6. **When the card is firmly seated in the connector and the card-mounting bracket is flush with the brackets on either side of it, secure the bracket with the screw you removed in step 4.**
7. **If you are installing an optional Wakeup On LAN network card, attach the three-wire power cable that came with the card to the P1 connector on the riser board (see Figure 6-3) and to the network interface controller (NIC) card.**
8. **Replace the expansion-card cage in the chassis as instructed in "Replacing the Expansion-Card Cage".**
9. **Connect any cables that should be attached to the card.**

   See the documentation that came with the card for information about its cable connections.

10. **Replace the computer cover, reconnect your computer and peripherals to their power sources, and turn them on.**

    NOTE: *After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

    ALERT! Cover was previously removed.

11. **To reset the chassis intrusion detector, enter the System Setup program and reset Chassis Intrusion to Not Detected.**

    See "Using the System Setup Program," for instructions.

    NOTE: *If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

Removing an Expansion Card

To remove an expansion card, follow these steps:

1. **If you are removing a non-Plug and Play ISA expansion card, enter the ICU and remove the expansion card from your configuration.**

   See "Using the ISA Configuration Utility," for instructions.

2. **Remove the computer cover according to the instructions in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

3. **If necessary, disconnect any cables connected to the card.**
4. **Remove the expansion-card cage as instructed in "Removing the Expansion-Card Cage".**
5. **Unscrew the mounting bracket of the card you want to remove.**
6. **Grasp the card by its outside corners, and slide it out of its connector.**
7. **If you are removing the card permanently, install a metal filler bracket over the empty card-slot opening.**

   NOTE: *Installing filler brackets over empty card-slot openings is necessary to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of your computer.*

8. **Replace the expansion-card cage in the chassis as instructed in "Replacing the Expansion-Card Cage".**
9. **Replace the computer cover, reconnect your computer and peripherals to their power sources, and turn them on.**

   NOTE: *After you remove and replace the cover, the chassis intrusion detector will cause the following message to*

be displayed at the next system start-up:

ALERT! Cover was previously removed.

10. **To reset the chassis intrusion detector, enter the System Setup program and reset Chassis Intrusion to Not Detected.**

    See "Using the System Setup Program," for instructions.

    NOTE: *If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

Adding Memory

Memory can be increased to a maximum of 256 megabytes (MB) by installing combinations of 16-, 32-, 64-, or 128-MB nonparity synchronous dynamic random-access memory (SDRAM) dual in-line memory modules (DIMMs) in the two DIMM sockets on the system board. Figure 6-6 shows the DIMMs and DIMM sockets. DIMM speed (66 megahertz [MHz]) should match the external bus speed of the microprocessor.

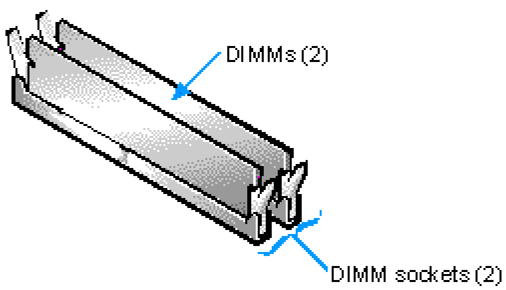


Figure 6-6. DIMMs and DIMM Sockets

Table 6-1 lists sample memory configurations and shows valid DIMM combinations and socket placements for each configuration.

Table 6-1. Sample DIMM Configuration Options

Total Desired Memory	DIMM Socket	
	B	C
16 MB	16 MB	
32 MB	32 MB	
32 MB	16 MB	16 MB
48 MB	16 MB	32 MB
64 MB	64 MB	
64 MB	32 MB	32 MB

80 MB	16 MB	64 MB
128 MB	64 MB	64 MB
128 MB	128 MB	
160 MB	128 MB	32 MB
192 MB	128 MB	64 MB
256 MB	128 MB	128 MB

Performing a Memory Upgrade

To perform a memory upgrade, follow these steps.

NOTE: *After you remove and replace the cover in the following procedure, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

ALERT! Cover was previously removed.

To reset the chassis intrusion detector, enter the System Setup program and reset Chassis Intrusion to Not Detected. See "Using the System Setup Program," for instructions. If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.

1. **Remove the computer cover according to the instructions in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

2. **Determine the DIMM sockets into which you will install DIMMs or replace existing DIMMs (see Figure 6-1).**
3. **Install or replace DIMMs as necessary to reach the desired memory total.**

   Follow the instructions in "Installing a DIMM" or "Removing a DIMM," as appropriate, found later in this section.

4. **Replace the computer cover, reconnect your computer and peripherals to their power sources, and turn them on.**

   After the system completes the power-on self-test (POST) routine, the system runs a memory test that displays the total memory of all installed DIMMs, including those you just installed.

   NOTES: *If the memory total is incorrect, turn off your computer and peripherals and disconnect them from their power sources, remove the computer cover, and make sure that the installed DIMMs are seated properly in their sockets. Then repeat this step.*

   The system detects that the new memory does not match the existing system configuration information, which is stored in nonvolatile random-access memory (NVRAM), and generates the following message:

   The amount of system memory has changed.

   Strike the F1 key to continue, F2 to run the setup utility

5. **Press <F2> to enter the System Setup program, and check the System Memory category.**

   The system should have already changed the value in the System Memory category to reflect the newly installed memory. Verify the new total.

   NOTE: *If the memory total is incorrect, turn off your computer and peripherals and disconnect them from their power sources, remove the computer cover, and check the installed DIMMs to make sure that they are seated properly in their sockets. Then repeat steps 4 and 5.*

6. **When the System Memory total is correct, press the <Esc> key to exit the System Setup program.**
7. **Run the Dell Diagnostics to verify that the DIMMs are operating properly.**

   See your *Diagnostics and Troubleshooting Guide* for information on running the Dell Diagnostics and troubleshooting any problems that may occur.

Installing a DIMM

To install a DIMM, follow these steps:

1. **Locate the first empty socket in which you plan to install a DIMM.**

   For optimum performance, DIMMs should be installed in consecutive sockets beginning with socket A.

2. **Locate the plastic securing clips at each end of the socket. Press the clips outward until they snap open.**
3. **Orient the DIMM to the socket by aligning the notches in the DIMM's edge connector with the crossbars in the socket.**
4. **Press the DIMM straight into the slot running down the center of the socket (see Figure 6-7) until the securing clips snap into place around the ends of the DIMM.**

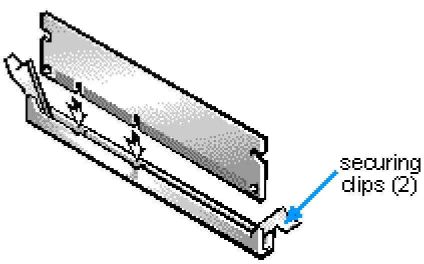


Figure 6-7. Installing a DIMM

Removing a DIMM

To remove a DIMM, press the securing clips outward (see Figure 6-8) simultaneously until the DIMM disengages from the socket (it should pop up slightly).

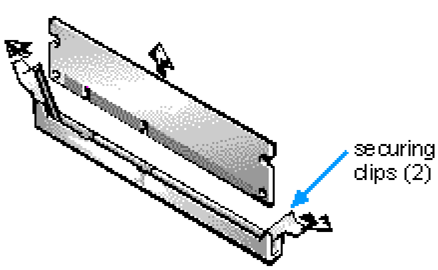


Figure 6-8. Removing a DIMM

Adding Video Memory

You can upgrade video memory from 2 to 4 MB by installing a video-memory upgrade module. Upgrading the video memory increases video performance and allows you to use video modes for application programs that require high resolutions and many colors.

To upgrade the video memory, follow these steps:

1. **Remove the computer cover according to the instructions in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

2. **To access the video-memory upgrade socket (labeled "VIDEO_UPGRADE") on the system board, remove the expansion-card cage as described in "Removing the Expansion-Card Cage".**
3. **Orient the module as shown in Figure 6-9. Then install it in the socket.**

   Video memory modules are *keyed*, or designed to fit in the socket in only one direction. The socket on the system board is notched so that the video memory module can be firmly seated only one way.

   Align the video memory module's edge connector with the slot in the center of the socket. Press the video memory module's edge connector firmly into the socket. Pivot the module down until it clicks into place.

   If you do not hear a sharp click, you should remove the module and reinstall it.

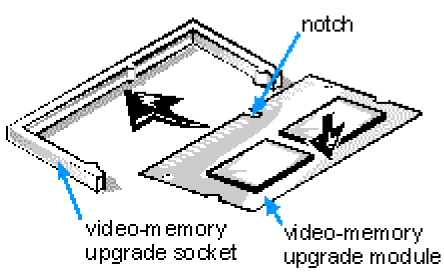


   Figure 6-9. Installing a Video-Memory Upgrade Module

4. **Replace the expansion-card cage as described in "Replacing the Expansion-Card Cage".**
5. **Replace the computer cover, reconnect your computer and peripherals to their power sources, and turn them on.**

   As the system boots, it detects the presence of the new video memory and automatically changes the system configuration information in the System Setup program.

6. **Enter the System Setup program, and confirm that the amount of video memory displayed in the Video Memory category is 4 MB.**

   See "Using the System Setup Program."

   If the video memory total is incorrect, turn off the system, remove the computer cover, and reseat the video-memory upgrade module in its socket.

7. **Run the Video Test Group in the Dell Diagnostics to test the new video memory.**

   For information on using the diagnostics and troubleshooting any problems that occur, see the chapter titled "Running the Dell Diagnostics" in your *Diagnostics and Troubleshooting Guide*.

Replacing the System Battery

A 3.0-volt (V) CR2032 coin-cell battery installed on the system board maintains system configuration, date, and time information in a special section of memory.

The operating life of the battery can extend up to ten years. The battery may need replacing if an incorrect time or date is displayed during the boot routine along with a message such as:

Time-of-day not set - please run SETUP program

or

Invalid configuration information -
please run SETUP program

or

Strike the F1 key to continue,
F2 to run the setup utility

To determine whether the battery needs replacing, reenter the time and date through the System Setup program and exit the program properly to save the information (see "Using the System Setup Program," for instructions). Turn off your system and disconnect it from AC power for a few hours; then reconnect and turn on your system. Enter the System Setup program. If the date and time are not correct in the System Setup program, replace your battery.

You can operate your system without a battery; however, without a battery, the system configuration information is erased if the system is turned off or unplugged from AC power. In this case, you must enter the System Setup program and reset the configuration options.

WARNING:
WARNING: There is a danger of the new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Use the following procedure to replace the system battery with another CR2032 coin-cell battery:

1. **If you have not already done so, make a copy of your system configuration information in the System Setup program.**

   If the settings are lost while you are replacing the battery, refer to your written or printed copy of the system configuration information to restore the correct settings. See "Using the System Setup Program," for instructions.

2. **Remove the computer cover according to the instructions in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

3. **Locate the battery and remove it.**

   The battery (see Figure 6-1) is mounted in a socket labeled "BATTERY," in the front-right corner of the system board (as you face the front of the system).

CAUTION: If you pry the battery out of its socket with a blunt object, be careful not to touch the system board with the object. Make certain that the object is inserted between the battery and the socket before attempting to pry out the battery. Otherwise, you may damage the system board by prying off the socket or by breaking circuit traces on the system board.

Pry the battery out of its socket with your fingers or with a blunt, nonconductive object, such as a plastic screwdriver.

4. **Install the new battery.**

   Orient the battery with the side labeled "+" facing up (see Figure 6-10). Then insert the battery into the socket, and snap it into place.

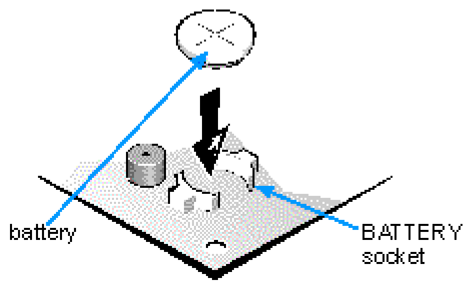


Figure 6-10. System Battery and Battery Socket

5. **Replace the computer cover, reconnect your computer and peripherals to their power sources, and turn them on.**

   NOTE: *After you remove and replace the cover, the chassis intrusion detector will cause the following message to be displayed at the next system start-up:*

   ALERT! Cover was previously removed.

6. **To reset the chassis intrusion detector, enter the System Setup program and reset Chassis Intrusion to Not Detected.**

   See "Using the System Setup Program," for instructions.

   NOTE: *If a setup password has been assigned by someone else, contact your network administrator for information on resetting the chassis intrusion detector.*

7. **In the System Setup program, confirm that the battery is operating properly.**

   See "Using the System Setup Program," for information on running the System Setup program.

   Enter the correct time and date through the System Setup program's System Time and System Date categories. Also, use the copy you made in step 1 to restore the correct settings for other system configuration information. Then exit the System Setup program.

8. **Turn off and unplug your computer. Leave the computer turned off for at least 10 minutes.**
9. **After 10 minutes, plug in the computer, turn it on, and enter the System Setup program. If the time and date are still incorrect, see the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide* for instructions on obtaining technical assistance.**

Installing Drives: Dell™ OptiPlex™ E1 Managed PC

Overview

Your Dell computer has three drive bays for installing the following types of drives (see Figure 7-1):

- The externally accessible drive bays at the front of the computer consist of one 3.5-inch drive bay (dedicated to a 3.5-inch diskette drive) and one 5. 25-inch bay that can hold one half-height, 5.25-inch device—typically a tape drive or CD-ROM drive.
- The hard-disk drive bay (located to the left of the externally accessible drive bays) can hold a single 3.5-inch enhanced integrated drive electronics (EIDE) hard-disk drive.

The next two sections contain information that you will need in several of the installation procedures described later in the chapter. The remaining sections of this chapter cover each type of drive installation.

NOTE: *In all of the following procedures, left and right refer to your left and right as you face the front of the computer.*

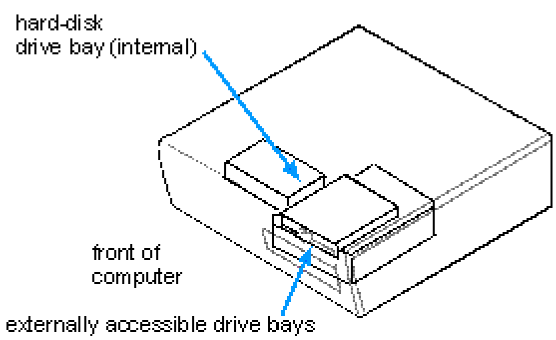


Figure 7-1. Drive Locations

Removing and Replacing Front-Panel Inserts

Empty drive bays contain a front-panel insert to protect the inside of the computer from dust particles and ensure proper airflow within the computer. Before you install a drive in an empty drive bay, you must first remove the front-panel insert.

To remove the insert covering the 5.25-inch bay, follow these steps:

1. **Turn off the system, including any attached peripherals, and disconnect all the AC power cables from their power sources.**
2. **Remove the computer cover as instructed in "Removing the Computer Cover".**
3. **Lay the computer cover upside down on a flat work surface, with the front of the cover facing toward you.**
4. **With your thumbs, press in each end of the insert until it snaps free of the cover (see Figure 7-2).**

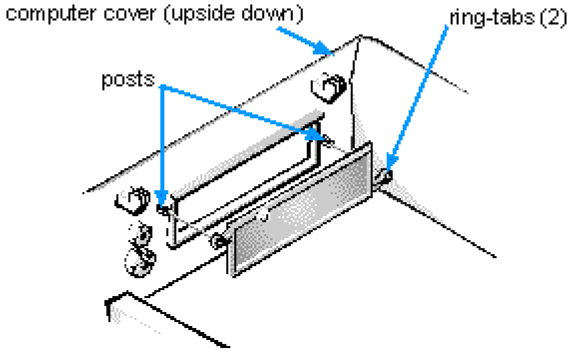


Figure 7-2. Removing the Front-Panel Insert for the 5.25-Inch Bay

To replace the front-panel insert for the 5.25-inch bay, work from inside the cover. Position the insert behind the bay opening, insert the two ring-tabs (see Figure 7-2) over the posts on the inside of the opening, and firmly press both ends of the insert into place.

To remove the insert covering the 3.5-inch bay, follow these steps:

1. **Complete steps 1 through 3 of the procedure for removing the 5.25-inch insert.**
2. **Inside the cover, locate the eject button mechanism for the 3.5-inch bay (see Figure 7-3). Press the mechanism toward the front panel to snap the plastic insert out of its opening.**

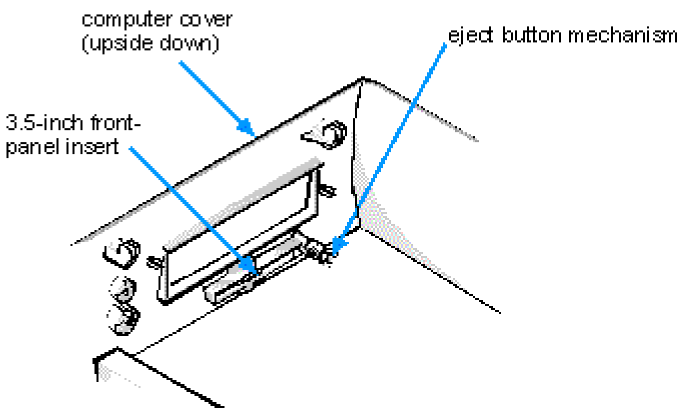


Figure 7-3. Removing the Front-Panel Insert for the 3.5-Inch Bay.

To replace the front-panel insert for the 3.5-inch bay, work from outside the cover. Place the insert in position and press it into the opening.

Connecting Drives

When installing a drive, you connect two cables - a DC power cable and an interface cable - to the back of the drive. Your drive's power input connector (to which you connect the DC power cable) resembles the connector shown in Figure 7-4.

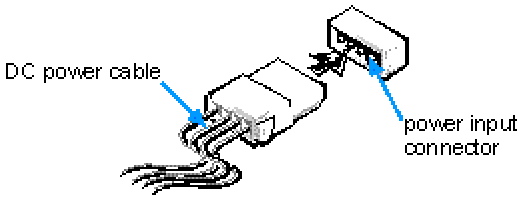


Figure 7-4. DC Power Cable Connector

The drive's interface connector is a card-edge connector or a header connector, as shown in Figure 7-5.

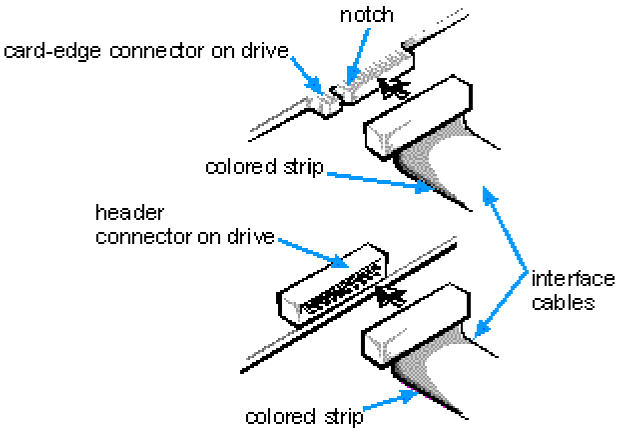


Figure 7-5. Drive Interface Connectors

When attaching the interface cable to a drive, be sure to match the colored strip on the cable to pin 1 of the drive's interface connector. For the location of pin 1 on the drive's interface connector, see the documentation that came with the drive.

When disconnecting an interface cable from the system board, be sure to press in on the locking tabs on the cable connector before disconnecting the cable. When attaching an interface cable to the system board, be sure that the locking tabs snap into place, ensuring that the cable is firmly attached to the connector on the system board.

Most interface connectors are keyed for correct insertion; that is, a notch or a missing pin on one connector matches a tab or a filled-in hole on the other connector. Keying ensures that the pin-1 wire in the cable (indicated by the colored strip along one edge of the cable) goes to the pin-1 end of the connector.

The pin-1 end of a card-edge connector is usually identified by a notch cut about a quarter of an inch from the end of the connector, as shown in Figure 7-5. A header connector is usually keyed by the omission of one of its pins, while the corresponding hole is filled in on the cable connector.

The pin-1 end of a connector on a board or a card is usually indicated by a silk-screened "1" printed directly on the board or card.

CAUTION: When connecting an interface cable, do not reverse the interface cable (do not place the colored strip away from pin 1 on the connector). Reversing the cable prevents the drive from operating and could damage the controller, the drive, or both.

Installing a Drive in the 5.25-Inch Drive Bay

The 5.25-inch drive bay can accommodate any of the following types of drives:

- A diskette drive or tape drive that uses the diskette/tape drive interface on the system board
- A CD-ROM or tape drive that uses the secondary EIDE interface on the system board
- A CD-ROM or tape drive that uses its own controller card

To install a drive in a 5.25-inch drive bay, follow these steps:

1. **Unpack the drive and prepare it for installation.**

   WARNING: Ground yourself by touching an unpainted metal surface on the back of the computer.

   Check the documentation that accompanied the drive to verify that the drive is configured for your computer system. Change any settings necessary for your configuration.

   NOTE: *If you are installing a non-EIDE tape drive, check the documentation for the drive to determine the jumper or switch settings used to designate the drive as drive address **DS4** (not DS2 or DS3 as may be indicated in the drive documentation). Unless the drive is already set to drive 4, reconfigure its jumper or switch setting (see "Jumpers" and "Switches").*

   If you are installing an EIDE CD-ROM or EIDE tape drive, configure the drive for the Cable Select setting.

2. **Remove the computer cover as instructed in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

3. **Remove the 3.5-inch diskette drive/bracket assembly.**

   Press outward on the two tabs on the left side of the drive bay to disengage the bracket from the chassis (see Figure 7-6). Then rotate the bracket upward, and remove it from the chassis.

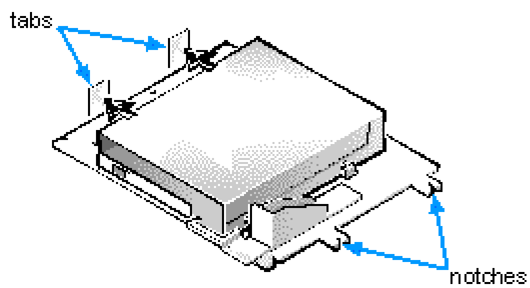


Figure 7-6. Removing the 3.5-Inch Diskette Drive/Bracket Assembly

4. **Lift the 5.25-inch drive bracket straight up and out of the chassis (see Figure 7-7).**

   If a drive is already installed in the bay and you are replacing it, be sure to disconnect the DC power cable and interface cable from the back of the drive before removing the drive/bracket assembly. To remove the old drive from the bracket, turn the drive/bracket assembly upside down and unscrew the four screws that secure the drive to the bracket (see Figure 7-7).

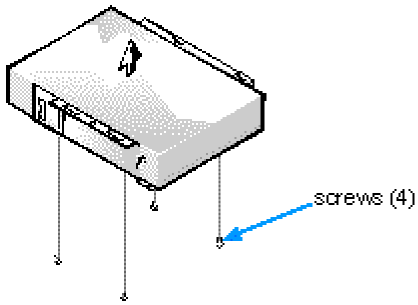


Figure 7-7. Removing the 5.25-Inch Drive Bracket

5. **Attach the bracket to the new drive.**

   Turn the drive upside down, and locate the four screw holes around its perimeter. Fit the bracket over the drive so that the notched end aligns with the front of the drive. Use the score marks on the drive bracket to help align the screw holes on the drive with the screw holes on the bracket (see Figure 7-8).

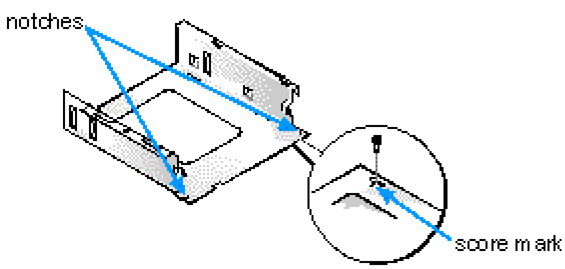


Figure 7-8. Installing a Drive in the 5.25-Inch Drive Bracket

   To further ensure proper positioning of the drive in the chassis, insert and tighten all four screws *in the order in which the holes are numbered* (the holes are marked "1" through "4").

6. **Reinstall the 5.25-inch drive/bracket assembly in the chassis.**

   Align the notches on the front of the drive bracket (see Figure 7-8) with the front of the computer. Hold the bracket level, and lower the assembly straight down into place (see Figure 7-9).

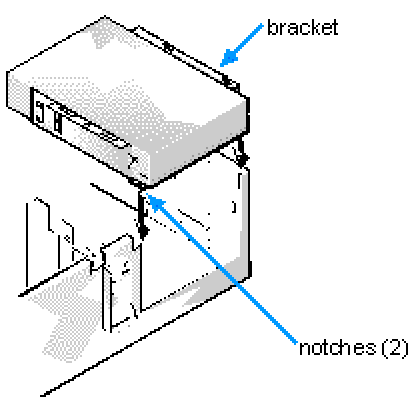


Figure 7-9. Inserting the Drive Bracket into the Drive Bay

7. **If you are installing a drive that has its own controller card, install the controller card in an expansion slot.**

   See "Installing an Expansion Card".

8. **Connect a DC power cable to the power input connector on the back of the drive (see Figure 7-10).**
9. **Connect the appropriate interface cable to the interface connector on the back of the drive (see Figure 7-10).**

   If your system came with an EIDE CD-ROM or tape drive, use the spare connector on the existing interface cable. Otherwise, use the EIDE interface cable provided in the drive kit.

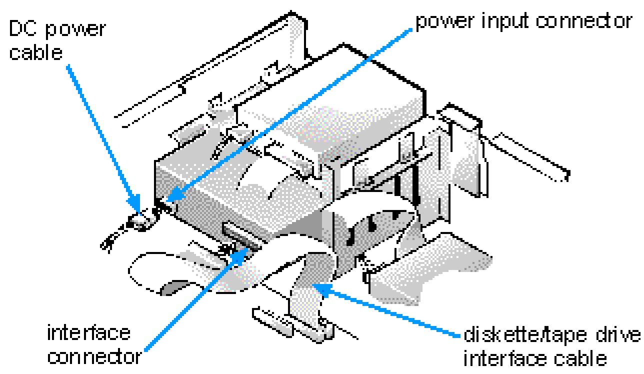


Figure 7-10. Attaching Cables to a Drive in the 5.25-Inch Drive Bay

10. ***For an EIDE tape drive or CD-ROM drive*, connect the other end of the interface cable to the interface connector labeled "IDE2" on the system board.**

    For a diskette drive or non-EIDE tape drive, connect the cable from the drive to the interface connector labeled "DSKT" on the system board.

    For a drive that comes with its own controller card, connect the other end of the interface cable to the controller card.

    Check all cable connections. Fold cables out of the way to provide airflow for the fan and cooling vents.

11. **If the 5.25-inch drive bay was previously empty, remove the front-panel insert from the front bezel.**

    See "Removing and Replacing Front-Panel Inserts" found earlier in this chapter.

12. **Replace the computer cover (see "Replacing the Computer Cover"); reconnect your computer and peripherals to their power sources, and turn them on.**
13. **Update your system configuration information.**

    For a diskette drive, enter the System Setup program and update the appropriate Diskette Drive category (A or B) to reflect the size and capacity of the new diskette drive. (For more information, see "Using the System Setup Program.")

    If you installed a non-EIDE tape drive as the second drive, set the Diskette Drive B category to Not Installed.

    For EIDE CD-ROM and tape drives, set the Secondary Drive n category to match the drive you installed. See "Primary Drive *n* and Secondary Drive *n*" for instructions.

    To reset the chassis intrusion detector, highlight the System Security category and press <Enter>. Highlight Chassis Intrusion and use the left- or right-arrow key to choose Reset.

14. **Verify that your system works correctly.**

    See your *Diagnostics and Troubleshooting Guide* for information on running the Dell Diagnostics and troubleshooting any problems that may occur. Use the following guidelines to determine which test to use:
    - If you installed a diskette drive, test it by running all of the subtests in the Diskette Drive(s) Test Group of the Dell Diagnostics.
    - If you installed a CD-ROM drive, see the documentation that came with the drive for instructions on loading device drivers and using the drive. If it is an EIDE CD-ROM drive, test it by running all of the subtests in the IDE CD-ROM Drives Test Group of the Dell Diagnostics.
    - If you installed a tape drive, first verify that your diskette drive is still operating correctly by running all of the subtests in the Diskette Drive(s) Test Group of the Dell Diagnostics. Then perform a tape backup and verification test with the

drive as instructed in the tape-drive software documentation that came with the tape drive.

NOTE: *The tape drives sold by Dell come with their own operating software and documentation. After you install a tape drive, refer to the documentation that came with the drive for instructions on installing and using the tape drive software.*

Installing an EIDE Hard-Disk Drive

This section includes information on installing, partitioning, and formatting an EIDE hard-disk drive.

An EIDE drive (which must be 1 inch high or less) can be installed in the hard-disk drive bracket in the left-front corner of the chassis. To install an EIDE hard-disk drive in the hard-disk drive bracket, follow these steps:

1. **If you are replacing a hard-disk drive that contains data you want to keep, be sure to make a backup of your files before you begin this procedure.**

   See your operating system documentation for instructions.

2. **Prepare the drive for installation.**

   WARNING: Ground yourself by touching an unpainted metal surface on the back of the computer.

   CAUTION: When you unpack the drive, do not set it on a hard surface, which may damage the drive. Instead, set the drive on a surface, such as a foam pad, that sufficiently cushions it.

   Check the documentation that accompanied the drive to verify that it is configured for your computer system.

3. **Remove the computer cover as instructed in "Removing the Computer Cover".**

   CAUTION: Turn off the computer and unplug it from the electrical outlet. See "Protecting Against Electrostatic Discharge" in the safety instructions at the front of this guide.

4. **Remove the expansion-card cage as instructed in "Removing and Replacing the Expansion-Card Cage".**
5. **Remove the hard-disk drive bracket from the chassis.**

   If a hard-disk drive is already installed on the drive bracket and you are replacing it, disconnect the DC power cable and EIDE cable from the drive.

   Loosen the captive screw that secures the hard-disk drive bracket to the chassis. Then rotate the bracket upward, and lift it out of the chassis (see Figure 7-11).

   Detach the hard-disk drive from the bracket by removing the four screws.

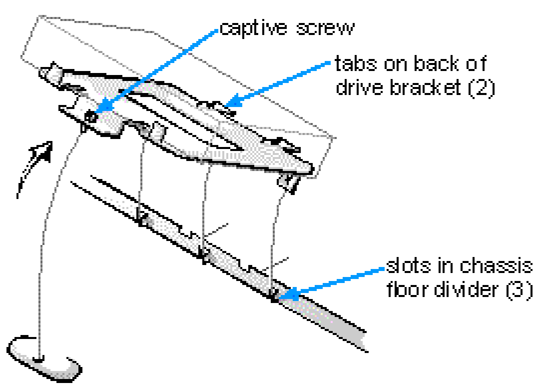


Figure 7-11. Removing the Hard-Disk Drive Bracket

6. **Secure the drive bracket to the new drive.**

Turn the drive upside down, and locate the four screw holes around its perimeter. Orient the drive bracket so that the end labeled "CONNECTOR" faces the side of the drive containing the interface and power connectors. Place the bracket on the drive, and secure it with four screws (see Figure 7-12).

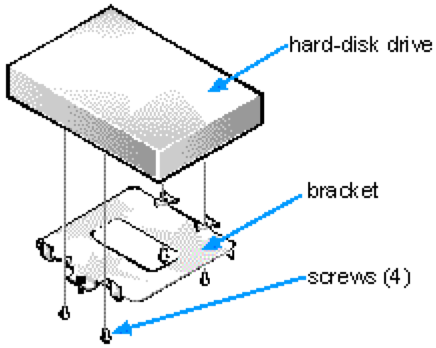


Figure 7-12. Securing the Hard-Disk Drive to the Bracket

7. **Reinstall the hard-disk drive/bracket assembly in the chassis.**

   Grasp the bracket by the tab containing the captive screw, and hold the bracket at a 45-degree angle to the chassis floor. Align the two tabs on the other side of the bracket with the score marks on the chassis floor. Insert the two tabs into the slots in the chassis floor divider, and rotate the assembly downward. Then tighten the captive screw until the bracket is securely fastened to the chassis floor (see Figure 7-11).

8. **Connect one end of the EIDE cable to the 40-pin interface connector on the back of the hard-disk drive (see Figure 7-13).**

   The cable is keyed so that the colored edge of the EIDE cable lines up with the pin-1 end of the interface connector.

   CAUTION: You must match the colored strip on the EIDE cable with pin 1 on the drive's interface connector to avoid possible damage to your system.

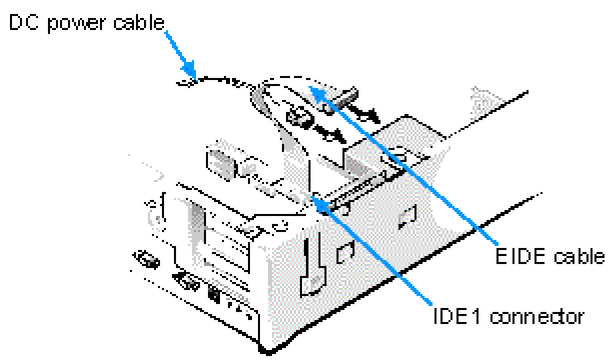


Figure 7-13. Attaching Hard-Disk Drive Cables

9. **If it is not already connected, connect the other end of the EIDE cable to the IDE1 connector on the system board.**

   CAUTION: You must match the colored strip on the EIDE cable with pin 1 on the IDE1 connector to avoid possible damage to your system.

   To locate the IDE1 connector, see Figure 6-1.

10. **Connect a DC power cable to the power input connector on the back of the drive (see Figure 7-13).**

    Check all connectors to be certain that they are properly cabled and firmly seated.

11. **Replace the expansion-card cage as instructed in "Replacing the Expansion-Card Cage".**
12. **Replace the computer cover. Then reconnect your computer and peripherals to their power sources, and turn them on.**
13. **Insert a bootable diskette (such as the *Dell Diagnostics Diskette*) into drive A, and turn on the computer system.**
14. **Enter the System Setup program, and update the Primary Drive 0 and Chassis Intrusion categories.**

    See "Primary Drive *n* and Secondary Drive *n*" and "Chassis Intrusion".

15. **Partition and logically format your drive, as described in "Partitioning and Logically Formatting Your EIDE Hard-Disk Drive" found later in this chapter, before proceeding to the next step.**
16. **Test the hard-disk drive by running the Hard-Disk Drive(s) Test Group in the Dell Diagnostics.**

    See your *Diagnostics and Troubleshooting Guide* for information on running the Dell Diagnostics and troubleshooting any problems that may occur.

17. **Install your operating system on your hard-disk drive.**

    Refer to the documentation that came with your operating system.

Partitioning and Logically Formatting Your EIDE Hard-Disk Drive

EIDE hard-disk drives must be physically formatted, partitioned, and logically formatted before they can be used to store data. Every hard-disk drive from Dell is formatted before it is sent to you.

NOTE: *On systems with hard-disk drives larger than 2 gigabytes (GB), create a primary partition of 2 GB and divide the remaining capacity into partitions of 2 GB or less. For example, a system with a 2.5-GB hard-disk drive would have a primary partition of 2 GB (drive C) and a second partition of 500 megabytes (MB) (drive D). Hard-disk drives must be partitioned this way because MS-DOS-based operating systems (including Windows NT, when using a file allocation table [FAT] 16 file system) do not support drive partitions larger than 2 GB.*

To partition and logically format your hard-disk drive, use the program(s) offered by your operating system.

For MS-DOS, use the **fdisk** and **format** commands to perform these procedures. The **fdisk** and **format** commands are described in the MS-DOS reference documentation.

For OS/2, see the discussion on partitioning and logical formatting in the documentation that came with the operating system.

CAUTION: **If you format your hard-disk drive under the OS/2 High Performance File System (HPFS), you cannot reformat the drive for MS-DOS without losing all HPFS data. See your OS/2 documentation for details.**

For Windows NT, see the discussion on partitioning and logical formatting in the documentation that came with the operating system.

CAUTION: **If you format your hard-disk drive under the Windows NT File System (NTFS), you cannot reformat the drive for MS-DOS without losing all NTFS data. See your Windows NT documentation for details.**

For the UNIX® operating system, refer to your UNIX documentation.

Technical Specifications: Dell™ OptiPlex™ E1 Managed PC

Table A-1. Technical Specifications

Microprocessor	
Microprocessor type	Intel Celeron microprocessor that runs at300 MHz internally/66 MHz externally.Design provides for future Dell-supportedupgrades. A slower compatibility speedcan be set through the System Setup program.
Internal cache	32-KB first-level (16-KB data cache; 16-KBinstruction cache)
Math coprocessor	internal to the microprocessor
System Information	
System chip set	Intel 82440EX PCI/AGP PIIX4E 82371EB
Data bus width	64 bits
Address bus width	32 bits
DMA channels	eight
Interrupt levels	15
System BIOS chip	2 Mb
System clock	66 MHz (matches external bus speed)
Expansion Bus	
Bus types	PCI and ISA
Bus speed	PCI: 33 MHz ISA: 8.33 MHz
PCI expansion-card connectors	two (one PCI connector shares a card-slotopening with an ISA connector)
ISA expansion-card connectors	two (one ISA connector shares a card-slotopening with a PCI connector)
ISA expansion-card connector size	98 pins
ISA expansion-card connector datawidth (maximum)	16 bits
PCI expansion-card connector size	120 pins
PCI expansion-card connector datawidth (maximum)	32 bits
Memory	
Architecture	64-bit (nonparity) noninterleaved

DIMM sockets	two, gold contacts
DIMM capacities	16-, 32-, 64-, and 128-MB SDRAM
Minimum RAM	16 MB
Maximum RAM	256 MB
BIOS address	F0000h
NIC ROM address	C8000h
Drives	
Externally accessible bays	one 5.25-inch bay for any removable-media device; one 3.5-inch bay for adiskette drive
Internally accessible bays	one 3.5-inch bay for a 1-inch-high EIDEhard-disk drive
Ports and Connectors	
Externally accessible:	
Serial (DTE)	two 9-pin connectors; 16550-compatible
Parallel	one 25-hole connector (bidirectional)
Video	one 15-hole connector
Integrated NIC	RJ45 connector
PS/2-style keyboard	6-pin mini-DIN connector
PS/2-compatible mouse	6-pin mini-DIN connector
USB	two USB-compliant connectors
Audio (optional)	three miniature jacks for line-in, line-out, and microphone
Internally accessible:	
Primary EIDE	40-pin connector on PCI local bus
Secondary EIDE	40-pin connector on PCI local bus
Diskette drive	34-pin connector
Hard-disk drive activity	4-pin connector
CD-ROM driveaudio interface cable	4-pin connector
ATI multimedia	40-pin connector
TAPI	4-pin connector
Video	
Video type	Integrated ATI Rage IIC baseline AGP

Video memory	2 MB SGRAM (upgradable to 4 MB)
Maximum resolution	1600 x 1200 pixels, 256 colors
Key Combinations	
<Ctrl><Alt><Del>	restarts (reboots) the system
<F2>	starts System Setup program (during POST only)
<Ctrl><Alt><\>	toggles microprocessor speeds on 101-key keyboard (in MS-DOS real mode only)
<Ctrl><Alt><#>	toggles microprocessor speeds on 102-key keyboard (in MS-DOS real mode only)
<Ctrl><Enter>	disables the system password at start-up
Controls and Indicators	
Reset control	push button
Power control	push button
Power indicators	green LEDs (one on front panel, one onriser board); blinking green in sleep state
Hard-disk drive access indicator	green LED
Link integrity indicator(on integrated NIC connector)	green LED
Activity indicator(on integrated NIC connector)	yellow LED
Power	
DC power supply:	
Wattage	145 W
Heat dissipation	808 BTU (fully loaded system withoutmonitor)
Voltage	90 to 135 V at 60 Hz; 180 to 265 V at 50 Hz
Backup battery	3-V CR2032 coin cell
Physical	
Height	10.9 cm (4.3 inches)
Width	40.89 cm (16.1 inches)
Depth	43.69 cm (17.2 inches)
Weight	10.89 kg (24 lb) or more, depending onoptions installed
Environmental	
Temperature:	
Operating	10 to 35C* (50 to 95F)

Storage	-40 to 65C (-40 to 149F)
Relative humidity	20% to 80% (noncondensing)
Maximum vibration:	
Operating	0.25 G at 3 to 200 Hz at 1 octave/min
Storage	0.5 G at 3 to 200 Hz at 1 octave/min
Maximum shock:	
Operating	left side (vertical orientation) and bottomhalf-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)
Storage	27-G faired square wave with a velocitychange of 508 cm/sec (200 inches/sec)
Altitude:	
Operating	-16 to 3048 m* (-50 to 10,000 ft)
Storage	-16 to 10,600 m (-50 to 35,000 ft)
* *At 35°C (95°F), the maximum operating altitude is 914 m (3000 ft).*	
NOTE: *For the full name of an abbreviation or acronym used in this table, see the Glossary in the online* System User's Guide.	

ISA Configuration Utility Messages: Dell™ OptiPlex™ E1 Managed PC

[Overview](#) [ICU Error Messages](#) [Configuration Manager Messages](#)

Overview

The ISA Configuration Utility (ICU) and its Configuration Manager are capable of identifying problems and alerting you to them. Both utilities can alert you to problems with card configuration as well as problems that prevent proper operation of the utility. This appendix describes each type of message and lists the possible causes and actions you can take to resolve any problems indicated by a message. See the following tables to locate your message and identify any possible corrective actions.

ICU Error Messages

The ICU can display a variety of error messages while in operation. These messages alert you to problems that prevent the ICU from running correctly, as well as informing you of resource conflicts that prevent the configuration of various cards in your computer. If you receive a message from the ICU, see Table B-1 for suggestions on resolving any problems indicated by the message.

Table B-2. Configuration Utility Messages

Message	Probable Cause	Corrective Action
Out of memory Memory allocation failed Not enough memory to run the ICU	Either of these messages can appear if the system runs out of memory during operation of the utility. This message appears when you start the ICU if the system does not have enough memory to run the utility.	Disable any TSR programs or any unneeded device drivers.
Can't open index file. This file is required for ICU to run.	The ICU cannot find the index file for its database.	Make sure to switch to drive A before attempting to start the utility.
No Configuration Manager.	The device driver needed by the ICU is corrupted or is not correctly configured.	Verify that the following **device** statement appears in your **config.sys** file: device=*drive*:*directory*\drivers\dos\ dwcfgmg.sys In this statement, *drive* and *directory* represent the drive and directory where

		the driver resides. The default is **c:\plugplay**.
At least one Plug and Play card in your system is not configured due to conflicts. These are marked "config err" in the list of configured cards. Due to conflicts, the ICU could only configure some Plug and Play cards in your system. Un-configured cards are marked "config err" in the list of configured cards.	The Configuration Manager or the ICU cannot configure at least one Plug and Play expansion card because of resource conflicts with one or more cards.	You must reconfigure the conflicting card(s). To find the conflicting card, perform the following steps: 1. **Select the Plug and Play expansion card marked with** config err**, and then click the Modify button.** The Card Configuration dialog box displays the functions assigned to the Plug and Play expansion card. 2. **Select a function and then click Settings. Click Cancel if the ICU does not display a message naming the conflicting card.** 3. **Repeat step 2 until the ICU displays a message box naming the conflicting card and the resource(s) in conflict. See the following table entry for an explanation of this message box.**
This device is unconfigurable because of a resource conflict with card *card_name*. The conflicting resource is *resource_name*. To fix, reconfigure the conflicting card.	The selected card is un-configurable because one of its resources is already being used by another device.	Perform the following procedure: 1. **Make a note of the card name and the type of conflicting resource.** 2. **Follow the procedure in "Modifying a Card" and change the value for** *resource_name* **used by** *card_name*.

The ICU has successfully configured all Plug and Play cards in your system. For the new configuration to take effect, save the configuration, then reboot your system.	The ICU has successfully configured all of the Plug and Play expansion cards that were not configured by the Configuration Manager.	To accept these settings, save the configuration information into NVRAM by selecting Exit from the File menu and then selecting Yes to save. You must reboot your system for these settings to take effect.
The loaded card is not a category card. Press OK to proceed.	The category you have chosen is not the correct category under which to add this card.	Select OK. The ICU automatically opens the correct category's dialog box. Continue the procedure for adding the card as described in " Adding a Listed Card" or " Adding an Unlisted Card".
No more DMA values can be added. No more interrupt values can be added. No more memory values can be added. No more I/O port values can be added.	No more values are available for the resource you are trying to add or modify.	The maximum number of values for each resource is as follows: • 4 DMA channels • 7 IRQ lines • 9 memory address blocks • 20 I/O ports To free values for the resource you are trying to add or modify, delete some of the values listed in the resource box for the card. If your card requires all of the values listed, contact your card manufacturer to resolve the issue.
The ICU detects a resource conflict between this card and *conflicting_card*.	You added or modified a card that now requires a *resource* value already in use by *conflicting_card*.	Try each of the following options until the problem is resolved: • Modify the card you are adding so that it uses a different value for *resource*. See "Modifying a Card" for instructions. • Modify *conflicting_card* so that it uses a different value for *resource*. See "Modifying a Card" for instructions. • If *conflicting_card* is not the system board, remove it from the computer. See "Removing a Card" in for instructions. • Remove all expansion cards from the ICU, and then add them back

The conflicting resource was: *resource*.		one at a time, beginning with the new card and resolving resource conflicts as they arise. See "Removing a Card" and " Adding a Listed Card" or "Adding an Unlisted Card" for instructions. • If you cannot resolve the resource conflict by any of the preceding methods, remove the new card. If you were modifying an existing card, reset the modified card to its previous resource value.
The configuration (.cfg) file used by the ICU for this card is now invalid or does not exist. Do you wish to load the file? No configuration (.cfg) file exists for the card being modified. Do you want to load one?	This message appears when you try to add a listed card and the configuration file for this card has been corrupted or deleted from the database. This message appears when you modify a card and its configuration file does not exist or has been deleted.	You can get a copy of the configuration file from the original *ISA Configuration Utility Diskette* that you used to create the backup ICU diskette. Use the following procedure: 1. **Insert the original *ISA Configuration Utility Diskette* into drive A.** 2. **Change to the** db **subdirectory on the diskette drive.** For example, type cd a:\db. 3. **Use a text editor to search the** icu.ndx **file for the card ID of the card you want to add or modify.** The name of the configuration file is part of this card ID. For example, if the card ID is ICU0200, the configuration file is **!icu0200.cfg** 4. **Copy the configuration file from the original ICU diskette to the backup diskette.**
This is an EISA system. Use an ECU, not the ICU, to configure your system.	This message appears if you attempt to run the ICU on an EISA system.	To use the ICU, you must load the utility onto a non-EISA system.
You have added a card using settings different from factory default. Reconfigure the card to the settings in the next display (see the card's manual) before installing it.	This message can appear in two situations: • You added an ISA expansion card, selected OK, and the ICU had to use resource values different from the card's defaults to avoid conflicts. • You added an ISA expansion card, selected Advanced, and chose resource values different from	Make note of the new card configuration shown in the Card Resource Usage dialog box displayed after this message. Change jumper settings on the ISA expansion card to match the new card configuration.

	the card's defaults.	
NOTE: *For the full name of an abbreviation or acronym used in this table, see the Glossary in the online* System User's Guide.		

Configuration Manager Messages

The Configuration Manager for the ICU identifies problems following system boot and generates messages if necessary. These messages alert you to any unsuccessful attempts to configure Plug and Play or Peripheral Component Interconnect (PCI) expansion cards, as well as any problems that interfere with the operation of the Configuration Manager. If you receive a message from the Configuration Manager, see Table B-2 for suggestions on resolving any problems indicated by the message.

Table B-2. Configuration Manager Messages

Message	Probable Cause	Corrective Action
Found Plug and Play ISA card: *Plug and Play ISA Card Name*.	This message appears at system start-up for each Plug and Play ISA expansion card recognized by the Configuration Manager.	Status message; no action is required.
NOTICE: Boot Device Not Active! CSN=*Card Select Number*.	A boot device was found to be inactive.	Status message; no action is required. The Configuration Manager automatically configures and activates the device.
One or more active devices have been re configured -- system requires reboot. Press any key to reboot system.	You modified the resource values of one or more PCI or Plug and Play ISA expansion cards.	Reboot the system to reconfigure the card(s).
The Plug and Play ISA card has been successfully configured. Card Count Plug and Play ISA cards have been successfully configured.	The Configuration Manager has successfully configured the given number of cards.	If this message does not match the number of Plug and Play ISA expansion cards installed in your computer, reinstall any Plug and Play expansion cards not listed and reboot the system.
ERROR: Insufficient CM Memory	There is not enough memory available to the Configuration Manager for it to run.	Disable any TSR programs or any unneeded device drivers.
ERROR: Fatal BIOS error Internal Error Code.	A BIOS call failed with an internal error. The most likely cause is an incompatibility between the BIOS and the	See the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide* for instructions on obtaining technical assistance.

	Configuration Manager.	
ERROR: Could not read NVS, Error=*Internal Error Code*.	An attempt to read the NVRAM failed.	See the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide* for instructions.
ERROR: Failed NVS write. Error=*Internal Error Code*.	An attempt to write to NVRAM failed.	Run the Dell Diagnostics to verify the integrity of your system NVRAM. See the chapter titled "Running the Dell Diagnostics" in your *Diagnostics and Troubleshooting Guide* for instructions. If you are unable to determine the cause of the error, see the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide* for instructions.
ERROR: Failed to activate device, CSN=*Card Select Number*.	A Plug and Play expansion card could not be activated.	Use the following procedure: 1. **Exit the ICU and turn off your system.** 2. **Remove the Plug and Play expansion card that could not be activated.** Follow steps 2 through 6 of "Removing an Expansion Card", and then return to this procedure. 3. **Reinstall the Plug and Play expansion card.** Follow steps 5 through 9 of "Installing an Expansion Card", and then return to this procedure. If you still receive the error message, contact the manufacturer of the Plug and Play expansion card for assistance.
WARNING: Could not configure *Plug and Play Card Name*. **WARNING:** Could not configure PCI device, ID=*DeviceID*. Failed to configure *Number of Total Count Plug and Play ISA* devices. Use your system's configuration utility to resolve conflicts. Press any key to continue.	The card(s) mentioned are not fully configured due to resource conflicts.	If you have documentation that lists the allowable resource values for your Plug and Play or PCI expansion card, you can use the following procedure to locate and resolve the resource conflict. NOTE: *If you do not have documentation listing the allowable resource values, see the corrective action for these messages on the following page.* 1. **Start the ICU.** Any Plug and Play or PCI expansion cards that could not be configured should be marked config err on the list of cards in the ICU window.

		2. **Select the System Resources option from the View menu.** The System Resource Usage dialog box displays all resources currently used by the system. 3. **Select one of the resources used by your Plug and Play or PCI expansion card, and click Used By Card.** The Card Resources Usage dialog box identifies which device is using the resource. 4. **Repeat step 3 until you have identified all conflicting resources and the cards that use them.** 5. **Modify the cards, as needed, to free the resources required by the un-configured Plug and Play or PCI expansion card.** See "Modifying a Card" in for instructions.
WARNING: Could not configure *Plug and Play Card Name*. **WARNING:**Could not configure PCI device, ID=*DeviceID.* Failed to configure *Number of Total Count Plug and Play ISA* devices. Use your system's configuration utility to resolve conflicts. Press any key to continue.	The card(s) mentioned are not fully configured due to resource conflicts.	If you do not know the allowable resource values for your Plug and Play or PCI expansion card, use the following procedure to locate and resolve the resource conflict: 1. **Remove all card configurations from the ICU.** See "Removing a Card" for instructions. 2. **Reboot your system.** The ICU should automatically configure your Plug and Play or PCI expansion card. 3. **Add the ISA expansion cards back into the ICU, resolving any resource conflicts as they arise.** See "Adding a Listed Card" for instructions. If your Plug and Play or PCI expansion card is not automatically configured when you reboot the system with all other cards removed, you should contact the manufacturer of the card or see the chapter titled "Getting Help" in your *Diagnostics and Troubleshooting Guide.*

WARNING: Boot Device conflict detected! CSN=*Card Select Number* Error=*Error*.	One of the devices is attempting to use one or more resources assigned to the system's boot device.	Perform the following procedure: 1. **Start the ICU.** 2. **Identify the card marked** config err. This card is attempting to use one or more resources required by the system's boot device. 3. **Follow the procedure for the preceding error message in this table.**
NOTE: *For the full name of an abbreviation or acronym used in this table, see the Glossary in the online System User's Guide.*		